



**INSTITUTE FOR FOREST AND  
WATERSHED MANAGEMENT**

HUMBOLDT STATE UNIVERSITY  
1 HARPST ST  
ARCATA, CA 95521  
PH: (707) 825-7350  
FAX: (707) 825-7350

March 28, 2003

Lawrence G. Preston  
Associate Biologist and Contract Manager  
California Department of Fish and Game  
Northern California – North Coast Region  
619 2<sup>nd</sup> Street  
Eureka, CA 95501

Dear Mr. Preston,

Attached is the final report submitted in fulfillment of contract number: P0010018. This report is titled "Presence of Coho Salmon in 40 streams in the Mad River – Redwood Creek Hydrologic Unit". Along with this report the Institute for Forest and Watershed Management is submitting the following items:

- 1) Photocopies of 2001 and 2002 coho presence field data collected using either the Department of Fish and Game Ten Pool protocol or the Institute for Forest and Watershed Management Stream Reach Sampling protocol.
- 2) Hard copies of photos taken of the 2002 surveyed units.
- 3) One set of two (2) cds which contain:
  - a) Electronic files of all stream survey field data.
  - b) Scans of photographs taken of units surveyed in 2001 and 2002.
  - c) A copy of the Final Report.
  - d) A copy of the Summary Table for 2001 and 2002 coho presence.
  - e) Descriptions of photos and GPS points and landowner/manager contact information for stream reaches surveyed in 2002.
  - f) GIS coverage of GPS points and designations of reaches surveyed in 2001 and 2002.

Sincerely,

Bethany Reisberger  
Biologist, Institute for Forest and Watershed Management

# **Presence of Coho Salmon in 40 Streams in the Mad River-Redwood Creek Hydrologic Unit**

## **Final Report**



**Submitted to:** Lawrence G. Preston, Associate Biologist  
California Department of Fish and Game  
Northern California – North Coast Region  
619 2<sup>nd</sup> Street  
Eureka, California, 95501  
(707) 441-5736

**Prepared by:** Bethany Reisberger and Dana McCanne, Biologists  
The Institute for Forest and Watershed Management  
Humboldt State University  
1 Harpst Street  
Arcata, California, 95521  
(707) 825-7350

**Contract Number:** P0010018

**Contractor:** Humboldt State University Foundation

**Contract Dates:** June 1, 2001 – March 31, 2003

## TABLE OF CONTENTS

|                                                                                                      |    |
|------------------------------------------------------------------------------------------------------|----|
| BACKGROUND.....                                                                                      | 3  |
| METHODS .....                                                                                        | 3  |
| STATEMENT OF WORK .....                                                                              | 4  |
| RESULTS.....                                                                                         | 5  |
| 2001 FIELD SAMPLING.....                                                                             | 5  |
| 2002 FIELD SAMPLING.....                                                                             | 5  |
| STREAMS SAMPLED IN 2001 AND 2002 .....                                                               | 5  |
| REFERENCES .....                                                                                     | 8  |
| APPENDIX A   STREAM REACH SAMPLING PROTOCOL USED FOR IFWM<br>REGIONAL ABUNDANCE SURVEY STREAMS ..... | 9  |
| APPENDIX B   PHOTO DESCRIPTIONS 2002 FIELD SEASON .....                                              | 29 |
| APPENDIX C   GPS POINT DESCRIPTIONS 2002 FIELD SEASON .....                                          | 41 |
| APPENDIX D   CONTACT INFORMATION FOR PROPERTY OWNERS AND<br>LAND MANAGERS .....                      | 45 |
| APPENDIX F   MAPS OF SURVEY REACH LOCATIONS AND GPS POINTS.....                                      | 48 |

## Background

---

As part of the California Department of Fish and Game (DFG) Status Review of California Coho Salmon North of San Francisco (2002), the DFG North Coast California Coho Salmon Investigation (NCCCSI) began an effort to assess recent trends in coho salmon abundance and distribution. In a 1991 review by Brown and Moyle, records were found indicating historical occurrence of coho salmon in 582 California streams. The effort by NCCCSI is intended to augment Brown and Moyle's analysis in 396 streams from the Oregon border south to the Mattole River. The NCCCSI program consists of 1) a review of all published and unpublished data from the 396 streams and 2) after a review of the data, a field investigation of streams without a consecutive brood year lineage to determine if coho salmon presence could be detected. These streams were to be surveyed for three consecutive years beginning in the summer of 2001. In an attempt to coordinate research efforts with other agencies and scientific collectors, NCCCSI contracted with the Institute for Forest and Watershed Management (IFWM, formerly the Forest Science Project) at Humboldt State University. Under the direction of the DFG biologists and with the cooperation of private and public landowners in the Redwood Creek, Mad River, and Humboldt Bay drainages, IFWM performed stream surveys to assess coho salmon presence in 40 streams. These surveys were performed in conjunction with current monitoring efforts by IFWM to estimate regional abundance of juvenile coho salmon in the Mad-Redwood hydrologic unit (MR-HUC). This final report is submitted by IFWM in partial fulfillment of DFG Contract No. P0010018.

## Methods

---

Surveys for coho presence/absence were conducted using the Modified Ten-Pool Protocol provided by NCCCSI unless that stream was also to be surveyed as part of IFWM's current research and monitoring program in the MR-HUC. In cases where a NCCCSI presence/absence stream was also selected as part of IFWM's effort to estimate regional

abundance, the IFWM sampling protocol was used (Appendix A.). The IFWM protocol for estimating abundance of juvenile salmonids in streams is based on Hankin-Reeves (1988) and Hankin and Mohr (pre-publication) methodologies. The protocol was developed by DFG biologist Seth Ricker with the assistance of Dr. David Hankin, Professor and Chair, Department of Fisheries Biology, Humboldt State University. The primary sampling technique for both the NCCCSI and the IFWM protocols is delineation and selection of individual, in-stream habitat units followed by direct observation by a trained snorkel diver. In order to calibrate counts of fish by divers (IFWM protocol only) and in individual habitat units where direct observation was not a preferred technique (e.g. riffles or habitat units with low visibility or high complexity) backpack electrofishing was employed as a secondary sampling technique in accordance with the protocols. Field surveys were performed during summer and fall of 2001 and 2002.

## **Statement of Work**

---

The following is a list of products that will be provided to DFG:

- 1) Hardcopy and electronic files of all field data.
- 2) Photos of all pools surveyed for coho presence (hardcopies (2002) and electronic files (2001 and 2002)).
- 3) List and descriptions of photos (2002), (Appendix B.).
- 4) List and descriptions of GPS points at top and bottom of survey reaches (2002), (Appendix C.).
- 5) GIS coverage of GPS points plus markers indicating the bottom and top of each reach.
- 6) Summary table including all streams surveyed, indication of coho presence or absence, and type of protocol used.
- 7) Contact information for property owners and land managers, where available (2002), (Appendix D.).
- 8) Maps of survey reach locations and GPS points (2002) (Appendix F.).

## Results

---

### 2001 Field Sampling

During the 2001 field season, between July 2 and October 24, fish surveys were conducted on 41 streams. The presence of coho salmon was detected in 26 (63%) of these streams. Hall Creek was determined to be unsurveyable in 2001. Biologists in the field, after observing in-stream conditions such as extremely low water volume and poor water quality, determined that conducting any type of survey in Hall Creek could cause undue stress to fish species occupying the limited amount of available habitat. Since one of the essential habitat requirements for salmonids is water, coho were determined to be absent in Mill Creek, Powers Creek, and Quarry Creek as no water was found in the stream channel at the time the field crew attempted the survey. Coho were again absent from Powers Creek and Mill Creek in 2002 under the same dry channel conditions.

### 2002 Field Sampling

During the 2002 field season, surveys were conducted on a total of 43 streams between July 17 and November 4. Coho salmon were found in 28 (65%) of these streams. Presence of coho for Lindsay Creek and Squaw Creek was indicated by personal observations of state and federal agency personnel with residences located along the creek who are skilled in fish identification. A summary of the 2001 and 2002 presence surveys including streams surveyed, detection of coho presence, and protocol used for survey is contained in Table 1.

### Streams Sampled in 2001 and 2002

Thirty-three streams were sampled for presence/absence in 2001 and again in 2002. Of these 33 streams, 29 (88%) resulted in the same determination of coho presence. Coho presence was confirmed two years in a row in 17 (52%) of the 33 streams but could not be detected either year in 12 (36%) of these streams. Four streams (12%) had coho presence confirmed in either 2001 or 2002 but not in both years. These were Warren Creek, Dry Creek, Boulder Creek, and the North Fork of the Mad River.

Table 1. Summary of coho presence for streams surveyed during 2001 and 2002.

| No.                    | REDWOOD CREEK BASIN         | Coho 2001        | Protocol    | Coho 2002        | Protocol    |
|------------------------|-----------------------------|------------------|-------------|------------------|-------------|
| 164                    | Redwood Creek               | ns               |             | Yes <sup>1</sup> | IFWM        |
| 165                    | Prairie Creek               | Yes              | IFWM        | Yes              | IFWM        |
| 166                    | Little Lost Man Creek       | Yes              | Ten Pool    | ns               |             |
| 167                    | Lost Man Creek              | Yes              | IFWM        | Yes              | Ten Pool    |
| 168                    | Streelaw (North Fork)       | Yes              | IFWM        | ns               |             |
| 169                    | May Creek                   | Yes              | Ten Pool    | Yes              | Ten Pool    |
| 170                    | Godwood Creek               | ns               |             | Yes              | Ten Pool    |
| 172                    | Brown Creek                 | ns               |             | Yes              | Ten Pool    |
| 173                    | Tom McDonald Creek          | Yes              | Ten Pool    | Yes              | Ten Pool    |
| 174                    | Bridge Creek                | Yes              | IFWM        | Yes              | IFWM        |
| 175                    | Coyote Creek                | No <sup>2</sup>  | E-fish only | No               | Ten Pool    |
| 176                    | Panther Creek               | No <sup>2</sup>  | Ten Pool    | ns               |             |
| 177                    | Lacks Creek                 | No <sup>2</sup>  | E-fish only | No               | Ten Pool    |
| <b>COASTAL LAGOONS</b> |                             |                  |             |                  |             |
| 180                    | Big Lagoon                  |                  |             |                  |             |
| 180.1                  | Maple Creek                 | No <sup>1</sup>  | IFWM        | No <sup>1</sup>  | IFWM        |
| 180.2                  | North Fork Maple Creek      | No <sup>1</sup>  | IFWM        | ns               |             |
| <b>COASTAL</b>         |                             |                  |             |                  |             |
| 181                    | Little River                | Yes <sup>3</sup> | IFWM        | ns               |             |
| 185                    | Strawberry Creek            | No               | IFWM        | No               | Ten Pool    |
| <b>MAD RIVER BASIN</b> |                             |                  |             |                  |             |
| 187                    | Warren Creek                | Yes              | Ten Pool    | No               | Ten Pool    |
|                        | Essex Gulch                 | No               | Ten Pool    | ns               |             |
| 188                    | Lindsay Creek               | ns               |             | Yes <sup>4</sup> | *           |
| 189                    | Grassy Creek                | Yes              | IFWM        | Yes              | Ten Pool    |
| 190                    | Squaw Creek                 | Yes              | Ten Pool    | Yes <sup>3</sup> | *           |
| 191                    | Mather Creek                | Yes              | Ten Pool    | Yes              | Ten Pool    |
| 192                    | Hall Creek                  | ns               |             | Yes              | Ten Pool    |
| 193                    | Noisy Creek                 | Yes              | Ten Pool    | Yes              | Ten Pool    |
| 194                    | Mill Creek                  | No               | no water    | No               | no water    |
| 195                    | Leggit Creek                | No               | Ten Pool    | No               | Ten Pool    |
| 196                    | Kelly Creek                 | No               | Ten Pool    | No               | Ten Pool    |
| 197                    | Powers Creek                | No               | no water    | No               | no water    |
| 198                    | Palmer Creek                | No               | Ten Pool    | No               | Ten Pool    |
| 199                    | Quarry Creek                | No               | no water    | No               | Ten Pool    |
| 200                    | Camp Bauer (Hatchery) Creek | ns               |             | Yes              | Ten Pool    |
| 201                    | North Fork Mad River        | Yes              | Ten Pool    | No <sup>1</sup>  | E-fish only |
| 202                    | Sullivan Gulch              | Yes <sup>1</sup> | IFWM        | ns               |             |
| 203                    | Long Prairie Creek          | No               | Ten Pool    | No               | Ten Pool    |
| 204                    | Dry Creek                   | No               | Ten Pool    | Yes              | Ten Pool    |
| 205                    | Canon Creek                 | ns               |             | Yes <sup>1</sup> | IFWM        |
| 206                    | Maple Creek                 | Yes              | IFWM        | Yes              | Ten Pool    |

Table 1. Continued.

| No.                             | MAD RIVER                   | Coho 2001 | Protocol | Coho 2002        | Protocol |
|---------------------------------|-----------------------------|-----------|----------|------------------|----------|
| 207                             | Black Creek                 | No        | IFWM     | No               | Ten Pool |
| 208                             | Boulder Creek               | Yes       | IFWM     | No               | IFWM     |
| <b>HUMBOLDT BAY TRIBUTARIES</b> |                             |           |          |                  |          |
| 211                             | Jacoby Creek                | Yes       | Ten Pool | Yes              | IFWM     |
| 212                             | Rocky Gulch                 | ns        |          | No               | Ten Pool |
| 213                             | Cochran Creek               | Yes       | Ten Pool | ns               |          |
| 214                             | Freshwater Creek            | Yes       | IFWM     | Yes <sup>1</sup> | IFWM     |
| 215                             | Ryan Creek                  | Yes       | Ten Pool | Yes <sup>3</sup> | IFWM     |
| 216                             | McCreedy Gulch              | ns        |          | Yes <sup>1</sup> | IFWM     |
| 217                             | Little Freshwater Creek     | Yes       | IFWM     | Yes <sup>1</sup> | IFWM     |
| 218                             | Cloney Gulch                | ns        |          | Yes <sup>1</sup> | IFWM     |
| 219                             | Falls Gulch                 | ns        |          | Yes <sup>1</sup> | IFWM     |
| 220                             | Graham Gulch                | ns        |          | Yes <sup>1</sup> | IFWM     |
| <b>ELK RIVER BASIN</b>          |                             |           |          |                  |          |
| 221                             | North Fork Elk River        | Yes       | IFWM     | Yes <sup>1</sup> | IFWM     |
| 224                             | South Fork Elk River        | Yes       | IFWM     | Yes              | IFWM     |
| 225                             | Little South Fork Elk River | Yes       | Ten Pool | Yes              | Ten Pool |
| 227                             | Salmon Creek                | No        | Ten Pool | ns               |          |

\* Single observation

<sup>1</sup> Data collected for IFWM by DFG S-RAMP, Arcata<sup>2</sup> Data provided by Karen Bromley, DFG - Fortuna<sup>3</sup> Data collected for IFWM by the Simpson Resource Company<sup>4</sup> Coho observed by Margo Williams, DFG S-RAMP, Arcata<sup>5</sup> Coho observed by Rod Nakamoto, USFS Redwood Science Lab, Arcata

## References

- California Department of Fish and Game. 2002. Report to the Fish and Game Commission: status review of California coho salmon north of San Francisco. California Department of Fish and Game, Candidate Species Status Report 2002-03, Sacramento, California.
- Hankin, D.G., and M.S. Mohr. (manuscript in preparation). Two-phase survey designs for estimation of fish abundance in small streams. Department of Fisheries Biology, Humboldt State University, Arcata, California.
- Hankin, D.G., and G.H. Reeves. 1988. Estimating total fish abundance and total habitat area in small streams based on visual estimation methods. *Canadian Journal of Fisheries and Aquatic Sciences* 45:834-844.

**APPENDIX A.**

**STREAM REACH SAMPLING PROTOCOL**

**USED FOR**  
**IFWM REGIONAL ABUNDANCE SURVEY STREAMS**

## STREAM REACH SAMPLING PROTOCOL

This protocol describes the steps and procedures to implement reach level juvenile fish abundance surveys. A modified Hankin and Reeves protocol will be used with slight adaptation to incorporate appropriate methodologies for the estimation of multiple species/age classes of juvenile salmonids.

### Fish Species:

Target fish species include; young of the year (age 0+) Coho salmon, young of the year (age 0+) trout, and older age trout (age  $\geq 1+$ ). Because of the difficulty in unambiguously identifying juvenile steelhead and cutthroat trout, additional genetic sampling will take place to separate proportions of trout into appropriate species.

### Stream criteria:

Stream wetted width must be small enough that two divers can cover all habitat units (approximately 10m) and the majority (>75%) of the pools are <1.1m in depth. Additionally, underwater visibility must be at least 3-5m to allow visual counts of juvenile fish.

If a stream reach is too large to be sampled, a detailed description of why it could not be sampled should be recorded.

If a stream reach is too small to dive or the visibility is too limited to provide 3-5m of underwater visibility the protocol for riffle habitats (e-fish only, and associated sampling rates) should be used for all habitat strata.

The entire reach must be surveyed, regardless of the apparent absence or end of target species distribution.

### Survey Period:

Surveys will be restricted to August and September.

### Sampling habitat unit selection:

Habitat units will be selected for sampling using a stratified-random procedure. Deep pools cannot be reliably sampled so a 100% sampling rate using the method of bounded counts (MBC) should be employed (see Snokel Survey, Phase II). Prior to going in the field, a computer algorithm is used to generate a list of YES's and NO's. The list will be arranged on a continuous strip of Write-in -the -Rain paper, coiled in a film canister, and dispensed one at a time through a slot in the canister. The NO's indicate the unit is **NOT** selected for sampling, and the YES's indicate the unit **WILL BE** sampled. The phase 1 selection strip will be used to select shallow pools and runs for visual observation counts at a rate of 1/2 or an inclusion probability of 0.50. A second strip will be used to select the calibration units at phase 2 at a rate that will vary from

one reach to another. The number of Phase II calibration units will depend upon the number of habitat units that are predicted to be within the reach bounds. The number of units within a given reach will be predicted by the size of the stream and the sampling rate predetermined before heading into the field. Riffles will **ONLY** be sampled by depletion electrofishing at a rate of 1/10 or an inclusion probability of 0.10.

## Habitat Mapping

Habitat units for the stream reach of interest are delineated prior to the dive survey. The time between the habitat mapping and the dive survey should be short enough such that changing water levels do not change habitat type delineations. (e.g. runs change to riffles, 1.1m max pool depth delineated as a deep pool may change to 1.0m max pool depth which would be delineated as a shallow pool).

### Habitat Classification

A habitat unit must be longer than the average width and should be bounded by distinct hydraulic breaks such that fish movement between units during the dive survey is nominal. If a habitat unit appears to be comprised of two habitat types, the unit should be classified as whatever the majority of the unit is.

### Variables Recorded

#### A) Unit Number

Number habitat units consecutively starting with unit *i*001, where *i* is the last number of the reach number. This results in a four-digit number (for unit 5 in reach 407 the Unit Number is 7005).

#### B) Habitat Type Code

The channel units used are Shallow Pool (SP), Run (RU), Riffle (RI), Deep Pool (DP), Side Channel (SC), and Other (OT). If a Dry Channel is encountered use the habitat code (DC) and record the unit length. Shallow pools and runs are units that can be both electrofished and snorkeled. The deep pool (DP) code is assigned to units that can be snorkel surveyed but are too deep to electrofish. The riffle (RI) habitat type code is used for units that can be electrofished effectively but are not suitable for snorkel surveys. Side channels (SC) are split flows that are too small for fish to inhabit (no fish will be present at the time of the survey, but may at higher flows). Other (OT) is used for units that may contain fish, but cannot be either electrofished or snorkel surveyed effectively.

#### Shallow Pool (SP)

Any scoured habitat unit with slow currents, little surface agitation, and a maximum depth less than 1.1 m.

#### Run (RU)

Swift water with some surface agitation and few occurrences of substrate breaking the surface (think flooded riffle), but with at least 40 centimeters in depth of approximately 60 percent of the wetted unit area (think deep enough to snorkel).

### Riffle (RI)

Habitat units with shallow fast-flowing water with surface agitation and substrate breaking the surface. These units are too shallow to dive.

### Deep Pool (DP)

Any scoured habitat unit with slow currents and little surface agitation with a maximum depth greater than 1.1 m.

### Side Channel (SC)

A side channel is defined as a channel in a split flow (see instructions below) in which the individual habitat units are **NOT** conducive to successful snorkeling. Often these channels contain a small fraction of the total stream flow. However, they can be as much as 50% of the total flow if the unit configuration within the channel does not allow for successful snorkeling (see discussion of split flows below.)

#### a. Strip#

Once habitat type has been determined, pull a sample selection strip for "shallow pools/runs" (same strip for both shallow pools and runs) or a riffle (separate strip). Deep pools are all snorkeled with a minimum of 4 diver passes (MBC) and other, side channels, and dry channels are not surveyed for fish. Cross off strip numbers as they are used. It is important to not skip or reuse and selection number. If a strip is broken and unused numbers are lost, return to the office to replace the lost number. You cannot start with the next available number. If you lost only a few, flag all units indicating lost strip and the divers can be informed as to the survey status of those units in the office. If you completely use a strip, you can begin with #1 on a second strip.

#### 1. Phase I No.

Sample strip number including the yes or no. Each sample selection strip provided will have (a) the selection probability for that strip, (b) the sequence number for the strip, and (c) a 'YES' or 'NO'. Record both the sequence number and the response. If the third run entry has a 'YES', then record as **3YES**. Check the probability to make sure you have the correct strip (Phase I it should be 0.60). If you have the wrong probability, go back to the office and get the correct strip; it is better to lose part of a day than the whole day!

#### 2. FISH? D/E/N

An "E" for **electroshock** (riffles only), "D" for **dive**, or "N" for **no** should be recorded in the **Fish?** column indicating the units to be sampled or not sampled. A fraction of the habitat within the reach will be selected for sampling using an electrofish and/or snorkel sampling method. The upper and lower boundaries of all units selected for sampling should be clearly marked with flagging. Write the habitat type, unit number, and the location of the flag (top or bottom) on each flag.

#### b. FLOW(%)

Record the eye estimated percent flow for every unit. An unbraided section of stream will always contain 100% flow. The flows in split channels will always be less than 100%, but should sum to 100%.

#### c. CHCODE (integer)

This is field is to characterize split flows. If the channels are separated by a substantial gravel bar or island, then a split flow has occurred. If a channel has sufficient flow so that the individual habitat units within the channel are deep enough to snorkel, then habitat type each channel. If the unit is not part of a split flow, then the channel code (CHCODE) is zero (0). If there is a small dry bar between what could be two riffles, call it one riffle, but if the unit on one side is snorkelable, then it should be classified as a split channel.

If a channel does not have sufficient flow for any unit within the channel to be suitable for fish to occupy, then the entire channel is classified as a Side Channel (SC, see definition above). Do not bother classifying completely dry channels in split channels. Habitat type the primary, etc., channel(s) first. Then assign a single habitat number to the entire side channel as one habitat. Do not habitat type or assign numbers to the component units of the side channel.

Record a channel code for every unit. This indicates the degree of channel "braiding" and allows accommodation in the analysis for multiple parallel channels.

- 0 - single channel with 100% flow.
- 1 - primary channel of a divided flow. This will have the majority of flow for the split flow.
- 2 - secondary channel of a divided flow. This will have less flow than the primary channel.
- 3 - tertiary channel of a divided flow. This will have less flow than the secondary channel.
- 4 - etc.

Always habitat type channels in ascending order according to percent flow as estimated by the habitat typer. Habitat type, each in its entirety, the primary channel of a split flow first, secondary channel of a split flow second, etc. In a separate comment sheet, draw a picture in the comments of all side channels and split flow channels. Habitat type up to but not through the unit in which the channels diverge. The channel codes recorded should be continuous consecutive numbers, e.g., 0, 1, 1, 1, 1, 2, 2, 3, 0. This indicates four units in the primary channel, two units in the secondary channel, and one unit in the tertiary channel.

#### d. LENGTH (m)

Record the measured length, along the thalweg, of each habitat unit to the nearest 0.1 m. If feet are used instead of meters, make it **EXTREMELY CLEAR**.

**e. WETWID**

**i. Top**

Record the measured wetted width to the nearest 0.1 m at the head or upstream end of each unit. The width should be taken perpendicular to the thalweg and not necessarily perpendicular to the channel.

**ii. Middle**

Record the measured wetted width to the nearest 0.1m in the middle of the habitat unit. The width should be taken perpendicular to the thalweg and not necessarily perpendicular to the channel.

**iii. Bottom**

Record the measured wetted width to the nearest 0.1 m at the tail or downstream end of each unit. The width should be taken perpendicular to the thalweg and not necessarily perpendicular to the channel.

**f. MAXDEP (m)**

Record the maximum depth to the nearest 0.1 m for all habitat units. If a habitat unit is too deep to measure, simply record an estimated depth followed by an "E", e.g., 2.5E.

**g. COMMENTS**

A comment field is provided to indicate possible problems (e.g., not sure of habitat type or wetted width deceptive- sizeable distance of shallow still water where fish will not be found) if comment will not fit in box, use additional paper. Additional paper for notes will be necessary to draw map and describe split flows.

## Snorkel Surveys

Prior to initiating any snorkel survey, at least two pool or run habitat units, located downstream and outside of the survey reach, should be snorkeled. These dives serve to "train the divers' eyes" to the size classes of trout that will be encountered in the particular creek. The age/size classes of trout can vary widely among different drainages due to differences in emergence timing and growth. The "smallest" size class seen will be counted as 0+ trout for the surveyed habitat units, while all larger size fish will be recorded as 1+ trout. Coho salmon have also been reported to exhibit a two year freshwater life history in California. Second summer, age 1+ coho salmon, are not, however, a target species for this survey and should only be recorded/counted in the comments field of the snorkel data form.

### 1) Phase I

The phase I (initial) fish counts are obtained by snorkeling each of the flagged shallow pool/runs and deep pools while progressing upstream to each successive unit. The diver(s) enter the unit to be surveyed from the lower end without disturbing the fish and progress through the length of the unit counting the fish as they go. A "clicker", underwater record slate, or other appropriate count recording tool should be carried to record fish numbers for abundant species. Fish counts **MUST** include all 0+ coho, 0+ trout, and 1+ trout. Older identifiable cutthroat should be noted in the comments field. The length of time that it takes to complete the snorkel count is recorded in case the unit is selected for calibration. Following completion of a snorkel count of the fish in a designated unit, the appropriate phase II sample selection number is drawn to determine if the surveyed unit will be selected for calibration. It is critical that the diver(s) doing the phase I snorkel in the unit **not** know if the unit will be calibrated prior to doing the dive.

Note: deep pools are not calibrated: all deep pools encountered will have a total of four dive counts per pool.

Snorkelers do not take the snorkel data forms in the field. The snorkelers record the data on 5x7 inch data sheets that fit into a small notebook (easy to slip into a wetsuit, etc. Divers should use Dura-write (plastic paper) notebooks or small write-in-the-rain type notebooks and transcribe the data later to the FSP Snorkel Data Form after returning from the field.

Dive crews are urged to continue past the reach upper boundary to assess the extent of species presence. This extended snorkeling is to be done **ONLY** if time allows, and only as far as time allows. Information regarding fish presence/absence and linear distance surveyed above upper boundary should be recorded in the comments field of the dive data form.

### 2) Phase II

If a shallow pool or run surveyed in phase I was selected for calibration and there were 20 or fewer 0+ coho counted, that unit needs to be dove 3 additional times for a method of bounded

count (MBC) estimate of actual number of fish present in the unit. These flagging depicting the unit as a calibration unit must remain in place. All calibration units, regardless the number of 0+ coho will also be electrofished. If the unit was selected for calibration and there were more than 20 0+ coho counted, indicate on the flags that the unit is to be electrofished only (NO MBC) and continue to the next phase I unit. Note again, all deep pools have 3 additional MBC dives, regardless of the count in the first dive.

## Variables recorded

### A) Unit Number

The unit number assigned by the habitat crew. This number is found on the flags that bound the habitat unit.

### B) Diver

Initials of the diver for that unit. If divers on the same team share the same initials, follow the initials with a number and indicate in comments which diver uses the numbers.

### C) Species Code

A count for 0+ coho, 0+ trout, 1+ and older trout, is required for EVERY dive, even if that count is zero.

When transferring data from the field notes to the dive data sheets, a zero should be included for every fish that has counts but is not present. DO NOT count a species/age class in one unit that is not counted in other units. Population estimates may be incorrectly made based upon incomplete count data.

Note clearly in comments species not counted but present. This is important as to avoid possible confusion between species not present and species not surveyed.

Code indicating species:

| <u>CODE</u> | <u>SPECIES</u>                                      |
|-------------|-----------------------------------------------------|
| CO          | Coho                                                |
| CH          | Chinook                                             |
| TR0         | age 0+ trout (Steelhead and unidentified Cutthroat) |
| TR1         | age 1+ trout (Steelhead and unidentified Cutthroat) |
| CT          | Cutthroat                                           |
| Oi          | Other species #I                                    |

Other species is for use if surveyor is interested in species not on the list. The surveyor assigns number *I* and notes in comments the species names with the corresponding number.

### D) Age class

The age class of the group counted for that row of data entry (0+, 1+)

### E) Dive 1

#### (a) Count

The number of fish counted in the phase I dive of that species within the age class for the row. The other dive count columns will be used for only units that require an MBC estimate.

**(b) Duration**

The duration of the dive. Note the start and stop times in the diver notebook

**(c) Vis**

Visibility for the initial dive. If visibility becomes worse in later repeat dives, make detailed notes in a comment page. If visibility for repeat dives becomes too clouded, the calibration must be electrofishing, or, if electrofishing is not possible, the unit reclassified as other. If unit must be electrofished, mark the unit flags accordingly.

| <u>CODE</u> | <u>Visibility</u>                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| E           | Excellent - no problems seeing anything in unit                                                                                                 |
| G           | Good - Approximate minimum of 10 feet of visibility. Can see from bank to bank with minimal movement, or, for two divers, from midline to bank. |
| P           | Poor - Visibility not good enough for reliable counts (e.g. <3m)                                                                                |
| Z           | Fails - Visibility near zero, counting impossible                                                                                               |

**F) Strip#**

Cross off strip numbers as they are used. It is important to not skip or reuse and selection number. If a strip is broken and unused numbers are lost, return to the office to replace the lost number. You cannot start with the next available number. If you lost only a few, flag all units that must be efished, indicating lost strip and the efish crew can be informed as to the survey status of those units in the office. If there is 20 or fewer 0+ coho, do the three additional dives on the units in question.

**(a) Phase II Number**

Sample strip number including the yes or no. Each sample selection strip provided will have (a) the selection probability for that strip, (b) the sequence number for the strip, and (c) a 'YES' or 'NO'. Record both the sequence number and the response. If the third run entry has a 'YES', then record as 3YES. Check the probability to make sure you have the correct strip (Phase II it should be 0.33). If you have the wrong probability, go back to the office and get the correct strip; it is better to lose part of a day than the whole day!

**(b) Efish**

Record a 'Y' or 'N'. If the unit was selected by phase II as a calibration unit, and if the unit is a **Run** or **Shallow Pool** record a 'Y' and the unit is left flagged as an electrofishing unit. Otherwise, record a 'N' for no phase II electrofishing, and remove the flags. If the unit is not calibrated or it is a deep pool, record an 'N'.

### *Phase II Snorkel Survey Variables Recorded*

Phase II snorkel dive data are recorded on to the same data sheets as the Phase I snorkel dive. The phase I data was recorded in the *Dive 1* column while the phase II data will go into the appropriate *Dive 2*, *Dive 3*, or *Dive 4* column for the appropriate dive pass. These dives will be immediately following the dive 1 pass and determining the phase II status. See *E) Dive 1* in **Phase I** section for a description of the variable entries. Be sure to note in comments if visibility decreases in any of the successive dives. Equal effort (duration) should be given to each dive.

## Electrofishing

The sampling of riffles and the calibration of phase I units by electrofishing should be done within two days of the initial snorkel surveys. This is a removal method for population estimation, thus block nets must be placed at the top and bottom of each electrofished unit. The effort (time spent electrofishing) on each pass should be approximately equal. Three depletion passes are made through each riffle, while calibration of runs and shallow pools require four depletion passes.

Any data sheet may have data for only one habitat unit, though more than one sheet might be used for one unit.

### *Variables recorded*

#### *Top table*

##### **A. E-fish time**

Record the start and stop time for the electrofishing for each pass (prefer the time off the electrofisher unit)

##### **B. Duration**

Record the duration of time the electrofishing unit was on for each pass

##### **C. Processing time**

Only if desired for those taking lengths and weights (NOT REQUIRED)

##### **D. Water temp (°C)**

**This item is required; no thermometer means no electrofishing!** Record the water temperature at the beginning of the pass. Note that there will be a maximum temperature at which the permits will not allow any electrofishing. It is extremely important to stop the electrofishing survey if this temperature is reached.

##### **E. Conductivity**

Record measured conductivity before electrofishing begins.

## ***Bottom Table***

### **A. Pass number**

The pass for which the fish of record were captured. This corresponds to 'Pass' column in the top table.

### **B. Species Code**

A count for 0+ coho, 0+ trout, and 1+ trout, is required for EVERY pass, even if that count is zero.

Zero counts on any pass should be included for every fish that has counts on any of the other passes; this includes passes from other habitat units. DO NOT count a species/age class in one unit that is not counted in other units. (If species are counted in a unit that was absent in earlier units, enter the zeros at the bottom of the earlier unit; note in the comments that these zero counts in bottom are "species found in other units"). Population estimates may be incorrectly made based upon incomplete count data.

Note clearly in comments salmonid species not counted but present. This is important as to avoid possible confusion between species not present and species not surveyed.

Code indicating species:

| <u>CODE</u> | <u>SPECIES</u>                                                |
|-------------|---------------------------------------------------------------|
| CO          | Coho                                                          |
| TR0         | age 0+ trout (Steelhead and unidentified Cutthroat)           |
| TR1         | Age 1+ and older trout (Steelhead and unidentified Cutthroat) |
| CT          | Cutthroat trout                                               |
| Oi          | Other species # <i>i</i>                                      |

Other species code is for use if surveyor is interested in species not on the list. The surveyor assigns number *i* and notes in comments the species names with the corresponding number.

### **C. Age Class**

The age class of the group counted for that row of data entry (0+, 1+)

### **D. Fish Count**

The number of fish captured (**the sum of live and mortalities**) for that species and age class on the given pass number. Note, if taking scale samples, weights, and/or lengths (not required), record a fish count of one then lump the count of all unmeasured fish in to the last row for that pass (i.e., if there are thirty fish and 20 were measured in one pass, then there would be 20 rows with one fish and the 21<sup>st</sup> row will have 10 fish).

#### **E. Mort. Count**

The number of mortalities for that species and age class on the given pass number. Note, if taking scale samples, weights, and/or lengths (not required), then record a zero if the individual fish was alive or a one if that fish was a mortality. **It is extremely important to record mortalities of any state or federally listed species (coho, chinook, and steelhead in the Mad River/Redwood Creek HUC are all listed)**

#### **F. Length (FL in mm)**

Fork length of an individual fish in mm. If fork length is not appropriate for the particular species, make a note in comments about which length was taken.

#### **G. Weight (g)- optional**

Weight of an individual fish in grams (Not required).

#### **H. Scales – taken on all tissue sampled trout $\geq$ to 50mm**

Denote with a 'Y' if scale samples were taken.

#### **I. Comments**

Be sure to note any difficulties encountered that may effect the reliability of the results.

## Tissue Sampling

Habitat units selected for phase II sampling (e-fishing) will be sub-sampled for tissue collection using a **random systematic sample** procedure. Prior to going into the field, an algorithm is used to generate a list of **Yes's** and **No's**. Similar to the habitat unit selection protocol, the list will be arranged on a continuous strip of write in the rain paper, and labeled "Tissue Sampling". "No's" indicate the unit is not selected to have tissue samples taken, while the "Yes" indicate a sample of fish in this unit will have tissue samples collected. Half of the electro-fished units will be selected for tissue sampling of a sub-sample of captured fish. Once a unit has been selected as a tissue sampling unit, and three depletion-removal passes have been made with the electro-fisher(s), a random systematic sample of the collected trout will have tissue samples taken. Age 0+ trout will be sampled at a rate of 1/20 and age 1+ will be sampled at a rate of 1/5, and 2+ and older trout will be sampled at a rate of 1/1. Random start numbers (r) will be generated in the field using the "random" button on an inexpensive calculator. The random number from the calculator will be between zero and one. This number is multiplied by 20 for age 0+. All decimals rounded up to the nearest whole number. This whole number is the start number, then every 20<sup>th</sup> age 0+, thereafter is sampled. The same procedure is used for age 1+ trout, except the random number is multiplied by 5, rounded up, and every fifth fish thereafter is sampled. This procedure is repeated at every new unit selected for tissue sampling.

### *Tissue Sampling Procedures*

1. **Genetic Tissue:** Once fish are anesthetized, work-up one fish at a time, measure fork length (mm), weigh (0.1 gram), then cut a 3 mm square fin clip from **juvenile tail fin** (Figure 3) using clean scissors and place on a piece of dry Rite-in-the-Rain paper. Clean scissors between samples to prevent contamination. **Note:** Samples must be air dried as soon as possible (never more than 8 hours). Air-drying tissue samples inside a facility usually takes about 24 hours. Air-drying in the sun is much quicker. Air-drying with a food dehydrator can shorten this to about 4-6 hours, especially when samples are collected during the wet winter months. When tissue is dry to the touch, place into a clean envelope labeled with Sample ID Number. Seal envelope.
- 3) **Scale Sample:** Use either a small pocketknife blade or tweezers to scrape and/or remove individually 6 to 18 scales from the area between the posterior part of the dorsal fin and the lateral line on one side of the fish (Figure 1). Clean knife and/or tweezers between samples to prevent contamination. Scale samples do not need to be taken on fish < 50mm.

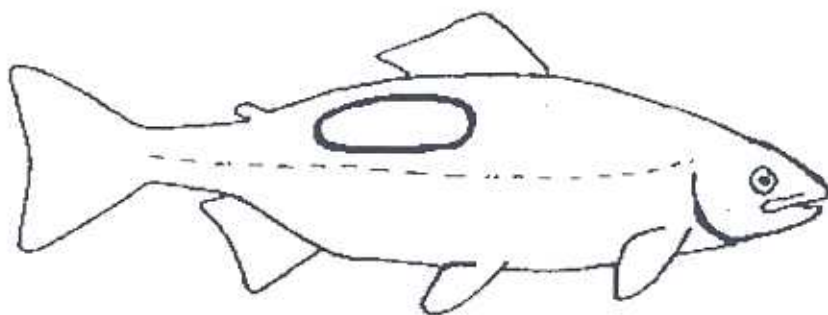


Figure 1. Scrape and/or remove scales from this area of fish >50mm.

- 3) Wipe the scales onto a parchment paper square, fold the square in half and place into an envelope. **Use one envelope for each fish, and make sure it has the same fish number as the genetic tissue envelope!!!**
- 4) Record all of the information requested on the envelope (Figure 2). **Note:** Record numbers on the envelopes are to be written or stamped on the envelope ahead of field sampling. We are currently using a five digit numbering system. The first number on the far left indicates office location (ex. 10199 indicates it came from Fort Bragg). 10000 = Fort Bragg, 20000 = Arcata, 30000 = Weaverville, 40000 = Yreka. In addition, duplicate envelopes should be taped together to ensure that genetic tissue and scale samples are collected from each fish sampled and numbered correctly.

**Date:** Date when the sample was taken (ex. **Mm/dd/yyyy** – 01/16/2002).

**Watershed Code:** Watershed from which the sample was taken (Table ) (ex. **Noy** = Noyo River, **Fre** = Freshwater Creek).

**Species:** Species code for species sampled (ex. **Onts** = Chinook, **Onmy** = steelhead, **Onki** = coho salmon, **Oncl** = coastal cutthroat trout).

**Location:** Specific location within watershed where sample was taken (ex. **R-12, Run-10**).

**Length:** Write the length in millimeters, and circle **FL** for fork length or **TL** for total length, (ex. **95 mm FL**).

**Weight:** Weight in grams (ex. **10.1** ).

**Tissue:** Circle **Genetic** for genetic tissue or **Scale** for scale sample.

**Sex:** Circle male or female if known or make a line if unknown.

**Collectors:** Write entire initials separated by a comma (ex. **WGN**)

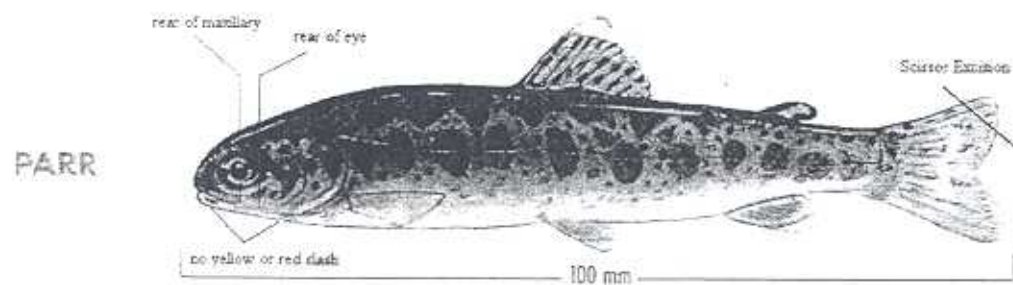
**Recovery Type:** Circle appropriate means of capturing specimen.

**Comments:** Indicate any marks or injuries in this location. **And for geographic areas where both trout species exist**, indicate the presence or absence of the two distinguishing morphological characteristics for coastal cutthroat trout, the slash and the length of the maxillary in relation to the eye orbit.

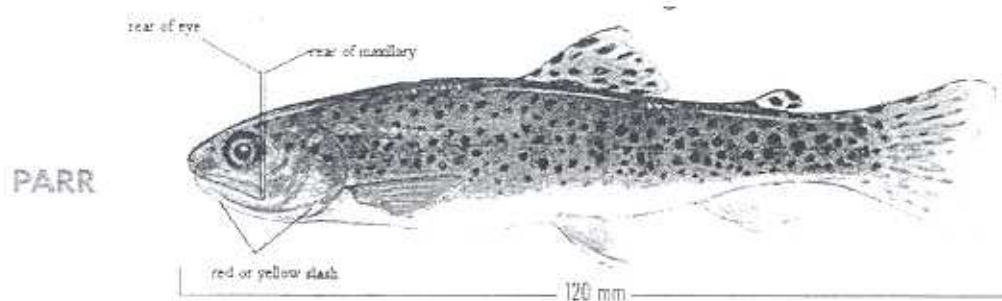
|                   |            |                |              |
|-------------------|------------|----------------|--------------|
| CDFGS RAMP FISH # |            | 10030          |              |
| DATE              | 8/14/02    | WATERSHED CODE | NOV          |
| SPECIES           | ONWY       |                |              |
| LOCATION          | FISH CREEK |                |              |
| SEX               | M / F      | TISSUE         | SCALE / GENE |
| LENGTH            | 1.1 TL FL  | WEIGHT         | 14.5 g       |
| FINCLIP           | UNC        | MARK           | ME           |
| RECOVERY TYPE     |            | COLLECTOR'S    | WILKINS      |
| CARCASS           |            | WEIR           | HATCH        |
| ANGLE             |            | TYPE           | TRAP         |
| COMMENTS          |            |                |              |

Figure 2. Correctly filled out tissue envelope of a scale tissue sample taken from a juvenile steelhead caught in our fyke trap.

- 2) Keep all envelopes together in a dry and safe place until you return to the office. Once back in the office, record all fish sampled onto the proper juvenile salmonid tissue sampling record form, place scales into food dehydrator for drying if necessary then into a storage container. Once again make sure the envelopes are dry before storing the envelopes.



A



B

Figure 3. A) Steelhead parr, depicting; 1) the location of the eye relative to the length of the maxillary and 2) no red or yellow jaw slash, and 3) location and relative size of tissue sample taken from the upper caudal fin. B) Cutthroat parr, depicting the location of the eye relative to the length of the maxillary and a red or yellow slash.

**APPENDIX B.**

**PHOTO DESCRIPTIONS**

**2002 FIELD SEASON**

# Institute for Forest and Watershed Management - List of Photos for 2002 Field Season

| Date      | Creek No. | Creek           | Photo # | Description                                                                                                 | Disc ID #:            | Field Crew 1  | Field Crew 2 |
|-----------|-----------|-----------------|---------|-------------------------------------------------------------------------------------------------------------|-----------------------|---------------|--------------|
| 7/10/2002 | 187       | Warren Ck       | 1       | Mouth of Warren Creek                                                                                       | Digital photo missing | B. Reisberger | S. Johnson   |
| 7/10/2002 | 187       | Warren Ck       | 2       | Warren Creek trees                                                                                          | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 187       | Warren Ck       | 3       | From Mad River gravel bank looking upstream to Warren Creek over deep pool.                                 | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 187       | Warren Ck       | 4       | From Warren Creek looking out over pool to Mad River downstream.                                            | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 187       | Warren Ck       | 5       | From Warren Creek looking out over pool to Mad River downstream.                                            | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 188       | Lindsay Ck      | 6       | Lindsay Creek mouth                                                                                         | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 188       | Lindsay Ck      | 7       | From Mad River, looking upstream of Lindsay Creek.                                                          | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 |           | Mad River Braid | 8       | Braid of Mad River                                                                                          | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 |           | Mad River Braid | 9       | Braid of Mad River                                                                                          | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 192       | Hall Ck         | 10      | From Mad River looking upstream of Hall Creek (dry)                                                         | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 192       | Hall Ck         | 11      | Hall Creek                                                                                                  | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 196       | Kelly Ck        | 12      | From Leggit Creek, looking upstream of Kelly Creek                                                          | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 195       | Leggit Ck       | 13      | Confluence of Kelly and Leggit Creek, from Leggit Creek looking upstream of Leggit Creek.                   | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 195       | Leggit Ck       | 14      | From Mad River looking upstream at mouth of Leggit Creek. Leggit dry at mouth for 33.1m, mouth is 6.5m wide | 343218                | B. Reisberger | S. Johnson   |
| 7/10/2002 | 196       | Kelly Ck        | 15      | Kelly Creek, looking upstream, ~35m from confluence with Leggit Creek.                                      | 343218                | B. Reisberger | S. Johnson   |
| 7/16/2002 | 204       | Dry Ck          | 1       | Mouth of Dry Creek.                                                                                         | 464258                | B. Reisberger | B. Grove     |
| 7/16/2002 | 204       | Dry Ck          | 2       | Pool #1, Start of Reach.                                                                                    | 464258                | B. Reisberger | B. Grove     |
| 7/16/2002 | 204       | Dry Ck          | 3       | Pool #2                                                                                                     | 464258                | B. Reisberger | B. Grove     |
| 7/16/2002 | 204       | Dry Ck          | 4       | Pool #3                                                                                                     | 464258                | B. Reisberger | B. Grove     |
| 7/16/2002 | 204       | Dry Ck          | 5       | Juvenile Coho in Pool #3.                                                                                   | 464258                | B. Reisberger | B. Grove     |
| 7/16/2002 | 204       | Dry Ck          | 6       | Pool #4                                                                                                     | 464258                | B. Reisberger | B. Grove     |
| 7/16/2002 | 204       | Dry Ck          | 7       | Pool #5                                                                                                     | 464258                | B. Reisberger | B. Grove     |
| 7/16/2002 | 204       | Dry Ck          | 8       | Pool #6, End of Reach.                                                                                      | 464258                | B. Reisberger | B. Grove     |

| Date      | Creek No. | Creek            | Photo # | Description                                                                        | Disc ID #:  | Field Crew 1  | Field Crew 2 |
|-----------|-----------|------------------|---------|------------------------------------------------------------------------------------|-------------|---------------|--------------|
| 7/16/2002 | 200       | Camp Bauer Creek | 9       | Mouth of Camp Bauer Creek (Hatchery Creek), no flow, confluence with NF Mad River. | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 10      | Pool #1, Start of Reach, ~112m from mouth                                          | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 11      | Pool #2                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 12      | Pool #3                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 13      | Pool #4                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 14      | Pool #5                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 15      | Pool #6                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 16      | Pool #7                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 17      | Pool #8                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 18      | Pool #9                                                                            | 464258      | B. Reisberger | B. Grove     |
| 7/16/2002 | 200       | Camp Bauer Creek | 19      | Pool #10 End of Reach                                                              | 464258      | B. Reisberger | B. Grove     |
| 7/17/2002 | 197       | Powers Ck        | 1       | 1 <sup>st</sup> Avenue overpass, next to the post office, upstream view.           | powck071702 | B. Reisberger | B. Grove     |
| 7/17/2002 | 197       | Powers Ck        | 2       | 1st Avenue overpass, next to Dell Art, downstream view.                            | powck071702 | B. Reisberger | B. Grove     |
| 7/17/2002 | 197       | Powers Ck        | 3       | Mouth at confluence with Mad River.                                                | powck071702 | B. Reisberger | B. Grove     |
| 7/17/2002 | 197       | Powers Ck        | 4       | Upstream of confluence with Mad River, 75m.                                        | powck071702 | B. Reisberger | B. Grove     |
| 7/17/2002 | 197       | Powers Ck        | 5       | Behind Mad River Brewery, see keg.                                                 | powck071702 | B. Reisberger | B. Grove     |
| 7/17/2002 | 197       | Powers Ck        | 6       | Blue Lake Blvd overpass, upstream view.                                            | powck071702 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 1       | Mouth of May Creek at confluence with Prairie Creek                                | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 2       | Pool #1 Start of Reach                                                             | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 3       | Pool #2, stickleback present                                                       | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 4       | Pool #2                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 5       | Pool #3                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 6       | Pool #4                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 7       | Pool #5                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 8       | Pool #6                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 9       | Pool #7                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 10      | Pool #8                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 11      | Pool #9                                                                            | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 12      | Pool #10                                                                           | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 13      | Culvert under Hwy 101                                                              | mayck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 169       | May Ck           | 14      | Culvert under Hwy 101                                                              | mayck071902 | B. Reisberger | B. Grove     |

| Date      | Creek No. | Creek       | Photo # | Description                                        | Disc ID #: | Field Crew 1  | Field Crew 2 |
|-----------|-----------|-------------|---------|----------------------------------------------------|------------|---------------|--------------|
| 7/19/2002 | 167       | Lost Man Ck | 1       | Pool #1 Start of reach                             | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 2       | Pool #2                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 3       | Pool #3                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 4       | Pool #4                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 5       | Pool #5                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 6       | Pool #6                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 7       | Pool #7                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 8       | Pool #8                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 9       | Pool #9                                            | lmck071902 | B. Reisberger | B. Grove     |
| 7/19/2002 | 167       | Lost Man Ck | 10      | Pool #10, End of reach                             | lmck071902 | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 1       | Mouth of Godwood at confluence with Prairie Ck.    | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 2       | Same as photo 1, but closer with board in picture. | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 3       | Pool #1, Start of Reach                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 4       | Pool #2                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 5       | Pool #3                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 6       | Pool #4                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 7       | Pool #5                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 8       | Pool #6                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 9       | Pool #7                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 10      | Pool #8                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 11      | Pool #9                                            | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 170       | Godwood Ck  | 12      | Pool #10, End of Reach                             | 916386     | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 1       | Pool #1, Start of Reach                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 2       | Pool #2                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 3       | Pool #3                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 4       | Pool #4                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 5       | Pool #5                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 6       | Pool #6                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 7       | Pool #7                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 8       | Pool #8                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 9       | Pool #9                                            | bnck072302 | B. Reisberger | B. Grove     |
| 7/23/2002 | 172       | Brown Ck    | 10      | Pool #10, End of Reach                             | bnck072302 | B. Reisberger | B. Grove     |
| 7/24/2002 | 199       | Quarry Ck   | 1       | Pool #1, Start of Reach                            | 916387     | B. Reisberger | B. Grove     |
| 7/24/2002 | 199       | Quarry Ck   | 2       | Pool #2                                            | 916387     | B. Reisberger | B. Grove     |
| 7/24/2002 | 199       | Quarry Ck   | 3       | Pool #3                                            | 916387     | B. Reisberger | B. Grove     |
| 7/24/2002 | 199       | Quarry Ck   | 4       | Pool #4                                            | 916387     | B. Reisberger | B. Grove     |

| Date      | Creek No. | Creek           | Photo # | Description               | Disc ID #: | Field Crew 1  | Field Crew 2 |
|-----------|-----------|-----------------|---------|---------------------------|------------|---------------|--------------|
| 7/24/2002 | 199       | Quarry Ck       | 5       | Pool #5                   | 916387     | B. Reisberger | B. Grove     |
| 7/24/2002 | 199       | Quarry Ck       | 6       | Pool #6                   | 916387     | B. Reisberger | B. Grove     |
| 7/24/2002 | 199       | Quarry Ck       | 7       | Pool #7, End of Reach     | 916387     | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 1       | Pool #1, Start of Reach 1 | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 2       | Pool #2                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 3       | Pool #3                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 4       | Pool #4                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 5       | Pool #5                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 6       | Pool #6                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 7       | Pool #7                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 8       | Pool #8                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 9       | Pool #9                   | 60803      | B. Reisberger | B. Grove     |
| 7/29/2002 | 187       | Warren Ck       | 10      | Pool #10, End of Reach 1  | 60803      | B. Reisberger | B. Grove     |
| 8/16/2002 | 187       | Warren Ck       | 1       | Pool #1, Start of Reach 2 | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 2       | Pool #2                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 3       | Pool #3                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 4       | Pool #4                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 5       | Pool #5                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 6       | Pool #6                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 7       | Pool #7                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 8       | Pool #8                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 9       | Pool #9                   | 612222     | B. Grove      | S. Johnson   |
| 8/16/2002 | 187       | Warren Ck       | 10      | Pool #10, End of Reach 2  | 612222     | B. Grove      | S. Johnson   |
| 8/1/2002  | 203       | Long Prairie Ck | 1       | Pool #1, Start of Reach 1 | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 2       | R1 Pool #2                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 3       | R1 Pool #3                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 4       | R1 Pool #4                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 5       | R1 Pool #5                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 6       | R1 Pool #6                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 7       | R1 Pool #7                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 8       | R1 Pool #8                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 9       | R1 Pool #9                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 10      | Pool #10, End of Reach 1  | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 11      | Pool #1, Start of Reach 2 | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 12      | Bethany snorkeling        | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002  | 203       | Long Prairie Ck | 13      | R2 Pool #2                | 549042     | B. Reisberger | B. Grove     |

| Date     | Creek No. | Creek           | Photo # | Description               | Disc ID #: | Field Crew 1  | Field Crew 2 |
|----------|-----------|-----------------|---------|---------------------------|------------|---------------|--------------|
| 8/1/2002 | 203       | Long Prairie Ck | 14      | R2 Pool #3                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002 | 203       | Long Prairie Ck | 15      | R2 Pool #4                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002 | 203       | Long Prairie Ck | 16      | R2 Pool #5                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002 | 203       | Long Prairie Ck | 17      | R2 Pool #6                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002 | 203       | Long Prairie Ck | 18      | R2 Pool #7                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002 | 203       | Long Prairie Ck | 19      | R2 Pool #8                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002 | 203       | Long Prairie Ck | 20      | R2 Pool #9                | 549042     | B. Reisberger | B. Grove     |
| 8/1/2002 | 203       | Long Prairie Ck | 21      | Pool #10, End of Reach 2  | 549042     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 1       | Pool #1, Start of Reach 1 | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 2       | R1 Pool #2                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 3       | R1 Pool #3                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 4       | R1 Pool #4                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 5       | R1 Pool #5                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 6       | R1 Pool #6                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 7       | R1 Pool #7                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 8       | R1 Pool #8                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 9       | R1 Pool #9                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 10      | Pool #10, End of Reach 1  | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 11      | Pool #1, Start of Reach 2 | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 12      | R2 Pool #2                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 13      | R2 Pool #3                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 14      | R2 Pool #4                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 15      | R2 Pool #5                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 16      | R2 Pool #6                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 17      | R2 Pool #7                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 18      | R2 Pool #8                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 19      | R2 Pool #9                | 549040     | B. Reisberger | B. Grove     |
| 8/6/2002 | 196       | Kelly Ck        | 20      | Pool #10, End of Reach 2  | 549040     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 1       | Pool #1, Start of Reach 1 | 549045     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 2       | R1 Pool #2                | 549045     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 3       | R1 Pool #3                | 549045     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 4       | R1 Pool #4                | 549045     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 5       | R1 Pool #5                | 549045     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 6       | R1 Pool #6                | 549045     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 7       | R1 Pool #7                | 549045     | B. Reisberger | B. Grove     |
| 8/7/2002 | 212       | Rocky Gulch     | 8       | Pool #8, End of Reach 1   | 549045     | B. Reisberger | B. Grove     |

Date Creek No. Creek Photo # Description Disc ID #: Field Crew 1 Field Crew 2

|          |     |             |    |                           |        |               |          |
|----------|-----|-------------|----|---------------------------|--------|---------------|----------|
| 8/7/2002 | 212 | Rocky Gulch | 9  | Pool #1, Start of Reach 2 | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 10 | R2 Pool #2                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 11 | R2 Pool #3                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 12 | R2 Pool #4                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 13 | R2 Pool #5                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 14 | R2 Pool #6                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 15 | R2 Pool #7                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 16 | R2 Pool #8                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 17 | R2 Pool #9                | 549045 | B. Reisberger | B. Grove |
| 8/7/2002 | 212 | Rocky Gulch | 18 | Pool #10, End of Reach    | 549045 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 1  | Pool #1, Start of Reach 1 | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 2  | R1 Pool #2                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 3  | R1 Pool #3                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 4  | R1 Pool #4                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 5  | R1 Pool #5                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 6  | R1 Pool #6                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 7  | R1 Pool #7                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 8  | R1 Pool #8                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 9  | R1 Pool #9                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 10 | Pool #10, End of Reach 1  | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 11 | Pool #1, Start of Reach 2 | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 12 | R2 Pool #2                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 13 | R2 Pool #3                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 14 | R2 Pool #4                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 15 | R2 Pool #5                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 16 | R2 Pool #6                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 17 | R2 Pool #7                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 18 | R2 Pool #8                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 19 | R2 Pool #9                | 549032 | B. Reisberger | B. Grove |
| 8/8/2002 | 198 | Palmer Ck   | 20 | Pool #10, End of Reach 2  | 549032 | B. Reisberger | B. Grove |
| 8/9/2002 | 195 | Leggit Ck   | 1  | Pool #1, Start of Reach 1 | 549043 | B. Reisberger | B. Grove |
| 8/9/2002 | 195 | Leggit Ck   | 2  | R1 Pool #2                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002 | 195 | Leggit Ck   | 3  | R1 Pool #3                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002 | 195 | Leggit Ck   | 4  | R1 Pool #4                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002 | 195 | Leggit Ck   | 5  | R1 Pool #5                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002 | 195 | Leggit Ck   | 6  | R1 Pool #6                | 549043 | B. Reisberger | B. Grove |

Date Creek No. Creek Photo # Description Disc ID #: Field Crew 1 Field Crew 2

|           |     |           |    |                           |        |               |          |
|-----------|-----|-----------|----|---------------------------|--------|---------------|----------|
| 8/9/2002  | 195 | Leggit Ck | 7  | R1 Pool #7                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 8  | R1 Pool #8                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 9  | R1 Pool #9                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 10 | Pool #10, End of Reach 1  | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 11 | Pool #1, Start of Reach 2 | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 12 | R2 Pool #2                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 13 | R2 Pool #3                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 14 | R2 Pool #4                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 15 | R2 Pool #5                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 16 | R2 Pool #6                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 17 | R2 Pool #7                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 18 | R2 Pool #8                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 19 | R2 Pool #9                | 549043 | B. Reisberger | B. Grove |
| 8/9/2002  | 195 | Leggit Ck | 20 | Pool #10, End of Reach 2  | 549043 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 1  | Pool #1, Start of Reach 1 | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 2  | R1 Pool #2                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 3  | R1 Pool #3                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 4  | R1 Pool #4                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 5  | R1 Pool #5                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 6  | R1 Pool #6                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 7  | R1 Pool #7                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 8  | R1 Pool #8                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 9  | R1 Pool #9                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 10 | Pool #10, End of Reach 1  | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 11 | Pool #1, Start of Reach 2 | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 12 | R2 Pool #2                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 13 | R2 Pool #3                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 14 | R2 Pool #4                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 15 | R2 Pool #5                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 16 | R2 Pool #6                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 17 | R2 Pool #7                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 18 | R2 Pool #8                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 19 | R2 Pool #9                | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 192 | Hall Ck   | 20 | End of Reach2             | 532793 | B. Reisberger | B. Grove |
| 8/12/2002 | 193 | Noisy Ck  | 1  | Pool #1                   | 532784 | B. Reisberger | B. Grove |
| 8/12/2002 | 193 | Noisy Ck  | 2  | Pool #2                   | 532784 | B. Reisberger | B. Grove |

| Date      | Creek No. | Creek     | Photo # | Description                               | Disc ID #: | Field Crew 1  | Field Crew 2 |
|-----------|-----------|-----------|---------|-------------------------------------------|------------|---------------|--------------|
| 8/12/2002 | 194       | Mill Ck   | 3       | Mill Ck                                   | 532784     | B. Reisberger | B. Grove     |
| 8/12/2002 | 194       | Mill Ck   | 4       | Mill Ck                                   | 532784     | B. Reisberger | B. Grove     |
| 8/12/2002 | 194       | Mill Ck   | 5       | Mouth of Mill Ck, confluence with Hall Ck | 532784     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 1       | Pool #1, Start of Reach 1                 | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 2       | Pool #2                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 3       | Pool #3                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 4       | Pool #4                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 5       | Pool #5                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 6       | Pool #6                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 7       | Pool #7                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 8       | Pool #8                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 9       | Pool #9                                   | 612221     | B. Reisberger | B. Grove     |
| 8/15/2002 | 189       | Grassy Ck | 10      | Pool #10, End of Reach 1                  | 612221     | B. Reisberger | B. Grove     |
| 8/16/2002 | 191       | Mather Ck | 1       | Pool #1, Start of Reach 1                 | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 2       | Pool #2                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 3       | Pool #3                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 4       | Pool #4                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 5       | Pool #5                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 6       | Pool #6                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 7       | Pool #7                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 8       | Pool #7                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 9       | Pool #8                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 10      | Pool #9                                   | 612220     | B. Grove      | S. Johnson   |
| 8/16/2002 | 191       | Mather Ck | 11      | Pool #10, End of Reach 1                  | 612220     | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 1       | Pool #1, Start of Reach 1                 | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 2       | R1 Pool #2                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 3       | R1 Pool #3                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 4       | R1 Pool #4                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 5       | R1 Pool #5                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 6       | R1 Pool #6                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 7       | R1 Pool #7                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 8       | R1 Pool #8                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 9       | R1 Pool #9                                | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 10      | Pool #10, End of Reach 1                  | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 11      | Pool #1, Start of Reach 2                 | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck | 12      | R2 Pool #2                                | no disc    | B. Grove      | S. Johnson   |

| Date      | Creek No. | Creek                  | Photo # | Description                                          | Disc ID #: | Field Crew 1  | Field Crew 2 |
|-----------|-----------|------------------------|---------|------------------------------------------------------|------------|---------------|--------------|
| 8/20/2002 | 175       | Coyote Ck              | 13      | R2 Pool #3                                           | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 14      | Mouth of Tributary                                   | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 15      | R2 Pool #4                                           | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 16      | R2 Pool #5                                           | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 17      | R2 Pool #6                                           | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 18      | R2 Pool #7                                           | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 19      | R2 Pool #8                                           | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 20      | R2 Pool #9                                           | no disc    | B. Grove      | S. Johnson   |
| 8/20/2002 | 175       | Coyote Ck              | 21      | Pool #10, End of Reach 2                             | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 1       | Juvenile Coho                                        | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 2       | Juvenile Coho                                        | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 3       | Pool #1, Start of Reach 1                            | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 4       | Pool #2                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 5       | Pool #3                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 6       | Pool #4                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 7       | Pool #5                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 8       | Pool #6                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 9       | Pool #7                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 10      | Pool #8                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 11      | Pool #9                                              | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 12      | Pool #10, End of Reach 1                             | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 13      | 2nd log jam looking downstream                       | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 14      | 2nd log jam looking upstream                         | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 15      | 1st log jam looking downstream                       | no disc    | B. Grove      | S. Johnson   |
| 8/21/2002 | 225       | Little S. F. Elk River | 16      | 1st log jam looking upstream                         | no disc    | B. Grove      | S. Johnson   |
| 8/22/2002 | 185       | Strawberry Ck          | 1       | Pool #1, at confluence w/ Patrick Ck, Start of Reach | 146614     | B. Reisberger | B. Grove     |
| 8/22/2002 | 185       | Strawberry Ck          | 2       | Pool #2                                              | 146614     | B. Reisberger | B. Grove     |
| 8/22/2002 | 185       | Strawberry Ck          | 3       | Pool #3                                              | 146614     | B. Reisberger | B. Grove     |
| 8/22/2002 | 185       | Strawberry Ck          | 4       | Pool #4                                              | 146614     | B. Reisberger | B. Grove     |
| 8/22/2002 | 185       | Strawberry Ck          | 5       | Pool #5                                              | 146614     | B. Reisberger | B. Grove     |
| 8/26/2002 | 177       | Lacks Ck               | 1       | Pool #1, Start of Reach 1.                           | 146666     | B. Grove      | S. Johnson   |
| 8/26/2002 | 177       | Lacks Ck               | 2       | R1 Pool #2                                           | 146666     | B. Grove      | S. Johnson   |
| 8/26/2002 | 177       | Lacks Ck               | 3       | R1 Pool #3                                           | 146666     | B. Grove      | S. Johnson   |
| 8/26/2002 | 177       | Lacks Ck               | 4       | R1 Pool #4                                           | 146666     | B. Grove      | S. Johnson   |
| 8/26/2002 | 177       | Lacks Ck               | 5       | R1 Pool #5                                           | 146666     | B. Grove      | S. Johnson   |
| 8/26/2002 | 177       | Lacks Ck               | 6       | R1 Pool #6                                           | 146666     | B. Grove      | S. Johnson   |

| Date       | Creek No. | Creek           | Photo # | Description                | Disc ID #: | Field Crew 1 | Field Crew 2  |
|------------|-----------|-----------------|---------|----------------------------|------------|--------------|---------------|
| 8/26/2002  | 177       | Lacks Ck        | 7       | R1 Pool #7                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 8       | R1 Pool #8                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 9       | R1 Pool #9                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 10      | Pool #10, End of Reach 1.  | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 11      | Pool #1, Start of Reach 2. | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 12      | R2 Pool #2                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 13      | R2 Pool #3                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 14      | R2 Pool #4                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 15      | R2 Pool #5                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 16      | R2 Pool #6                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 17      | R2 Pool #7                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 18      | R2 Pool #8                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 19      | R2 Pool #9                 | 146666     | B. Grove     | S. Johnson    |
| 8/26/2002  | 177       | Lacks Ck        | 20      | Pool #10, End of Reach 2   | 146666     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 1       | Pool #1 Start of Reach     | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 2       | Pool #2                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 3       | Pool #3                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 4       | Pool #4                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 5       | Pool #5                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 6       | Pool #6                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 7       | Pool #7                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 8       | Pool #8                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 9       | Pool #9                    | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 10      | Pool #10, End of Reach     | 146616     | B. Grove     | S. Johnson    |
| 8/27/2002  | 173       | Tom McDonald Ck | 1       | Pool #1, Start of Reach    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 2       | Pool #2                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 3       | Pool #3                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 4       | Pool #4                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 5       | Pool #5                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 6       | Pool #6                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 7       | Pool #7                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 8       | Pool #8                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 9       | Pool #9                    | 652335     | B. Grove     | S. Johnson    |
| 11/1/2002  | 206       | Maple Ck        | 10      | Pool #10, End of Reach     | 652335     | B. Grove     | S. Johnson    |
| 11/18/2002 | 207       | Black Ck        | 1       | Pool #1, Start of Reach 1  | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck        | 2       | Pool #2                    | no disc    | B. Grove     | B. Reisberger |

| Date       | Creek No. | Creek    | Photo # | Description               | Disc ID #: | Field Crew 1 | Field Crew 2  |
|------------|-----------|----------|---------|---------------------------|------------|--------------|---------------|
| 11/18/2002 | 207       | Black Ck | 3       | Pool #3                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 4       | Pool #4                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 5       | Pool #5a                  | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 6       | Pool #5b                  | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 7       | Pool #6                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 8       | Pool #7                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 9       | Pool #8                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 10      | Pool #9                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 11      | Pool #10, End of Reach 1  | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 12      | Pool #1, Start of Reach 2 | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 13      | Pool #2                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 14      | Pool #3                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 15      | Pool #4                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 16      | Pool #5                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 17      | Pool #6                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 18      | Pool #7                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 19      | Pool #8                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 20      | Pool #9                   | no disc    | B. Grove     | B. Reisberger |
| 11/18/2002 | 207       | Black Ck | 21      | Pool #10, End of Reach 2  | no disc    | B. Grove     | B. Reisberger |

**APPENDIX C.**

**GPS POINT DESCRIPTIONS**

**2002 FIELD SEASON**

Institute for Forest and Watershed Management - GPS for 2002 Field Season

| GPS File no. | Comment #1 | Comment #2       | Description                                                                                                                                                                                                 | Keep Point? (Yes/No) | Field Crew 1  | Field Crew 2  |
|--------------|------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------|---------------|
| R071618A     | DFG 207-A1 | BLACK CK         | Mouth, at confluence with Mad River.                                                                                                                                                                        |                      | B. Grove      | B. Reisberger |
| R071616A     | BAR007     | DRY CK           | Mouth of confluence with Mad River. Dry 6m to first flow (1.7m wetted width).                                                                                                                               |                      | B. Reisberger | B. Grove      |
| R071617A     | 204-A1     | DRY CK           | Start of lower reach. Pool #1                                                                                                                                                                               |                      | B. Reisberger | B. Grove      |
| R071618A     | 204-A2     | DRY CK           | End of lower reach. Top of Pool #6. Walked upstream bed ~260m, all dry, no flow.                                                                                                                            |                      | B. Reisberger | B. Grove      |
| R072318A     | DFG-170-A1 | GODWOOD CK       | Mouth of Godwood Creek at confluence with Prairie Creek. Bearing back to mouth is 342° and 6.5m. ~13m to first pool.                                                                                        |                      | B. Reisberger | B. Grove      |
| R081518A     | DFG 189-A1 | GRASSY CK        | Start of Reach 1                                                                                                                                                                                            |                      | B. Reisberger | B. Grove      |
| R081519A     | DFG 189-A2 | GRASSY CK        | End of Reach 1. Point is in middle of pool #10, ~155m from DFG 189-A1.                                                                                                                                      |                      | B. Reisberger | B. Grove      |
| R071019B     | BAR003     | HALL CK          | NOT ACTUALLY HALL CK, this point indicates where a braid of the Mad River reenters the mainstem                                                                                                             | No                   | B. Reisberger | S. Johnson    |
| R081220A     | DFG 192-A2 | HALL CK          | Upper end of Reach 1, point is ~15m upstream of last (10th) pool and out in field river right, at right angle to the creek.                                                                                 |                      | B. Reisberger | B. Grove      |
| R081222A     | DFG 192-B2 | HALL CK          | Upper end of Reach 2, point is ~40 m upstream of last pool (#9)                                                                                                                                             |                      | B. Reisberger | B. Grove      |
| R071020A     | BAR004     | HALL REAL        | Mouth of Hall ck. (width = 3.0m), 39.5m of dry channel from mouth to first pool, Compass bearing = 247.5 from bottom of first pool to mouth, Boulder cascade above first pool, Length = 17.8m, %Slope = 16. | Yes                  | B. Reisberger | S. Johnson    |
| R071621A     | BAR008     | HATCHERY CK (CB) | Mouth of Hatchery Ck had no flow at point of entry into North Fork Mad River.                                                                                                                               |                      | B. Reisberger | B. Grove      |
| R071623A     | 200-A2     | HATCHERY CK (CB) | 12m back bearing 263 degrees to top of lower reach, Pool #10                                                                                                                                                |                      | B. Reisberger | B. Grove      |

| GPS File no. | Comment #1 | Comment #2       | Description                                                                                                                                                                                                              | Keep Point? (Yes/No) | Field Crew 1  | Field Crew 2 |
|--------------|------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------|--------------|
| R071700A     | 200-A1     | HATCHERY CK (CB) | 3.5m downstream of bottom of Pool #1. Bottom of lower reach.                                                                                                                                                             |                      | B. Reisberger | B. Grove     |
| R071700B     | BAR009     | HATCHERY CK (CB) | Hatchery Creek culvert running underneath Simpson Rd 3010. Culvert is located 80m from mouth (all dry, no flow)                                                                                                          |                      | B. Reisberger | B. Grove     |
| R071021A     | BAR005     | KELLY CK         | Mouth, at confluence with Leggit ck. (width = 1.0m), low flow, vegetated, UPON FURTHER STUDY IN THE OFFICE, PROBABLY NOT KELLY CK                                                                                        | No                   | B. Reisberger | S. Johnson   |
| R080621A     | DFG 196-B2 | KELLY CK         | End of Reach 2, 18m bearing 59°                                                                                                                                                                                          |                      | B. Reisberger | B. Grove     |
| R082617A     | DFG 177-A1 | LACKS CK         | Point is ~18m upstream from mouth and ~5m perpendicular on left looking upstream.                                                                                                                                        |                      | B. Grove      | S. Johnson   |
| R071021B     | BAR006     | LEGGIT CK        | Mouth (width is approx. 12m), Dry, no outflow, appears to be used as a road, stagnant, smelly. Walked upstream from the confluence with Kelly ck. Approx. 80m, Leggit has cattails growing in it, more marsh than creek. | Yes                  | B. Reisberger | S. Johnson   |
| R080916A     | DFG 195-A1 | LEGGIT CK        | Point is ~3m upstream of property line (fence)                                                                                                                                                                           |                      | B. Reisberger | B. Grove     |
| R080918A     | DFG 195-A2 | LEGGIT CK        | Point is on entrance right next to fence (culvert is visible on upstream side)                                                                                                                                           |                      | B. Reisberger | B. Grove     |
| R080921A     | DFG 195-B2 | LEGGIT CK        | Point is on road. Pool #10 is ~55m bearing 142°                                                                                                                                                                          |                      | B. Reisberger | B. Grove     |
| R071019A     | BAR002     | LINDSAY CK       | Mouth (width approx. 5m), approx. 20m downstream of RR tressel, Lindsay appears muddy with sediment                                                                                                                      | Yes                  | B. Reisberger | S. Johnson   |
| R071922A     | 167-A1     | LOST MAN CK      | Point is ~30m downstream of Pool #1 and start of reach. (Couldn't get GPS point for end of reach. End of reach is ~270m above bridge at trailhead)                                                                       |                      | B. Reisberger | B. Grove     |
| R071916A     | BAR011     | MAY CK           | Mouth of May Creek at confluence with Prairie Creek, start of lower reach                                                                                                                                                |                      | B. Reisberger | B. Grove     |
| R071919A     | BAR012     | MAY CK           | Downstream end of culvert under Hwy 101. End of lower reach is ~200m downstream of point.                                                                                                                                |                      | B. Reisberger | B. Grove     |

| GPS File no. | Comment #1    | Comment #2      | Description                                                                                           | Keep Point? (Yes/No) | Field Crew 1  | Field Crew 2 |
|--------------|---------------|-----------------|-------------------------------------------------------------------------------------------------------|----------------------|---------------|--------------|
| R081223A     | DFG 193-COHO  | NOISY CK        | Pool #1 with 20 juvenile coho present.                                                                |                      | B. Reisberger | B. Grove     |
| R080817A     | DFG 198-A1    | PALMER CK       | NRM logging rd by Palmer Ck. Reach starts 71.9m downstream.                                           |                      | B. Reisberger | B. Grove     |
| R071721A     | BAR010        | POWERS CK       | Mouth of Powers Creek.                                                                                |                      | B. Reisberger | B. Grove     |
| R072420A     | DFG QUARRY-A1 | QUARRY CK       | Point is on the side of the road, next to the culvert (~2m from stream).                              |                      | B. Reisberger | B. Grove     |
| R080716A     | DFG 212-A1    | ROCKY GULCH     | Start of Reach. Point is on upstream side of metal gate.                                              |                      | B. Reisberger | B. Grove     |
| R080717A     | DFG 212-A2    | ROCKY GULCH     | End of Reach. Point is at downstream side of culvert under old Arcata Rd. (top of pool #8)            |                      | B. Reisberger | B. Grove     |
| R080719A     | DFG 212-B2    | ROCKY GULCH     | End of Reach 2. Point is on Road/driveway just above where the culvert empties out.                   |                      | B. Reisberger | B. Grove     |
| R082221B     | DFG STRAW-A1  | STRAWBERRY CK   | Mouth of Strawberry Ck at confluence with Patrick Ck.                                                 |                      | B. Reisberger | B. Grove     |
| R082718A     | DFG 173-A1    | TOM MCDONALD CK | Point is ~40m upstream from mouth and confluence with Redwood Creek.                                  |                      | B. Grove      | S. Johnson   |
| R071018A     | BAR001        | WARREN CK       | Mouth (width approx. 0.8m), flows into deep pool fed by Mad River                                     | Yes                  | B. Reisberger | S. Johnson   |
| R072922A     | DFG 187-A1    | WARREN CK       | Point is at the beginning of pool #1, 5.6m upstream of bridge on West End Road crossing Warren Creek. |                      | B. Reisberger | B. Grove     |
| R073000A     | DFG 187-A2    | WARREN CK       | Point is ~184m upstream from bridge on West End Road and ~6m downstream of end of reach.              |                      | B. Reisberger | B. Grove     |
| R081620A     | DFG 187-B1    | WARREN CK       | Point is ~15m perpendicular from stream.                                                              |                      |               |              |
| R081621A     | DFG 187-B2    | WARREN CK       | Point is ~6m perpendicular to stream. ~346m from DFG 187-B1.                                          |                      |               |              |

**APPENDIX D.**

**CONTACT INFORMATION  
FOR  
PROPERTY OWNERS AND LAND MANAGERS  
2002 FIELD SEASON**

Institute for Forest and Watershed Management - Contact list for property owners or land managers

| Creekno | Stream             | Ownership                                          | Contact                                             | Phone             |
|---------|--------------------|----------------------------------------------------|-----------------------------------------------------|-------------------|
| 167     | Lost Man Creek     | Redwood National Park                              | Dave Anderson                                       | 464-6101 Ext.5271 |
| 169     | May Creek          | Redwood National Park                              | Dave Anderson                                       | 464-6101 Ext.5271 |
| 170     | Godwood Creek      | Redwood National Park                              | Dave Anderson                                       | 464-6101 Ext.5271 |
| 172     | Brown Creek        | Redwood National Park                              | Dave Anderson                                       | 464-6101 Ext.5271 |
| 173     | Tom McDonald Creek | Redwood National Park                              | Dave Anderson                                       | 464-6101 Ext.5271 |
| 174     | Bridge Creek       | Redwood National Park                              | Dave Anderson                                       | 464-6101 Ext.5271 |
| 175     | Coyote Creek       | Simpson                                            | Tom McDonald                                        | 668-4475          |
| 177     | Lacks Creek        | Tom Stover                                         | Dan Cahoon, Able Forestry Consultants               | 445-4130          |
| 178     | McDonald Creek     | Humboldt Lagoons State Park                        | Jay Harris                                          | 488-2041          |
| 178     | McDonald Creek     | West Coast Real Estate Corporation                 | Ken, manager, Redwood Trails RV Park                | 488-2061          |
| 178     | McDonald Creek     | Simpson                                            | Tom McDonald                                        | 668-4475          |
| 179     | Fresh Creek        | Humboldt Lagoons State Park                        | Jay Harris                                          | 488-2041          |
| 179     | Fresh Creek        | West Coast Real Estate Corporation                 | Ken, manager, Redwood Trails RV Park                | 488-2061          |
| 179     | Fresh Creek        | Simpson                                            | Tom McDonald                                        | 668-4475          |
| 185     | Strawberry Creek   | Humboldt County; Public Access                     |                                                     |                   |
| 187     | Warren Creek       | Jack Walsh                                         | Jack Walsh                                          | 442-5789          |
| 187     | Warren Creek       | Jack Wilson                                        | Jack Wilson                                         | 822-5092          |
| 188     | Lindsay Creek      | Multiple landowners                                |                                                     |                   |
| 189     | Grassy Creek       | James Timmons                                      | James Timmons                                       | 822-4358          |
| 190     | Squaw Creek        | Rodney and Pamela Nakamoto                         | Rodney Nakamoto                                     | 839-2292          |
| 191     | Mather Creek       | Suzanne Smith                                      | Suzanne Smith                                       | 935-6338          |
| 191     | Mather Creek       | Simpson                                            | Tom McDonald                                        | 269-1367          |
| 192     | Hall Creek         | Kernan Construction                                | Sandra                                              | 826-8686          |
| 193     | Noisy Creek        | Muecke-McAdams; Treelands                          | Bob Kelley, Natural Resource Management Corporation | 269-1367          |
| 194     | Mill Creek         | Muecke-McAdams; Treelands                          | Bob Kelley, Natural Resource Management Corporation | 269-1367          |
| 195     | Leggit Creek       | McAdams; Muecke-McAdams; & Treelands               | Bob Kelley, Natural Resource Management Corporation | 269-1367          |
| 196     | Kelly Creek        | McAdams; Muecke-McAdams; & Treelands               | Bob Kelley, Natural Resource Management Corporation | 269-1367          |
| 197     | Powers Creek       | Public Access; city streets & Mad River floodplain |                                                     |                   |
| 198     | Palmer Creek       | McAdams; Muecke-McAdams; & Treelands               | Bob Kelley, Natural Resource Management Corporation | 269-1367          |
| 199     | Quarry Creek       | Alan and Kim Kelley                                | Alan Kelley                                         | 826-2128          |

| Creekno | Stream               | Ownership                              | Contact         | Phone           |
|---------|----------------------|----------------------------------------|-----------------|-----------------|
| 200     | Camp Bauer Creek     | Simpson                                | Tom McDonald    | 668-4475        |
| 201     | North Fork Mad River | Simpson                                | Tom McDonald    | 668-4475        |
| 203     | Long Prairie Creek   | Simpson                                | Tom McDonald    | 668-4475        |
| 204     | Dry Creek            | Simpson                                | Tom McDonald    | 668-4475        |
| 206     | Maple Creek          | Dunaway Investments; Maple Creek Ranch | Carey Rasmussen | 825-1504        |
| 207     | Black Creek          | Judy Wartella and Erik Weibel          | Judy Wartella   | 825-5147        |
| 208     | Boulder Creek        | Victor Guynup                          | Victor Guynup   | 443-7128        |
| 211     | Jacoby Creek         | Multiple landowners                    |                 |                 |
| 212     | Rocky Gulch          | Bill and Ginny Hole                    | Bill Hole       | 839-8785        |
| 212     | Rocky Gulch          | Darren and Megan Mierau                | Darren Mierau   | 826-7794 Ext.15 |
| 223     | North Fork Elk River | PALCO                                  | Rob Darby       | 764-4193        |
| 224     | South Fork Elk River | Bureau of Land Management              | Dave Fuller     | 825-2315        |
| 225     | Little SF Elk River  | Bureau of Land Management              | Dave Fuller     | 825-2315        |

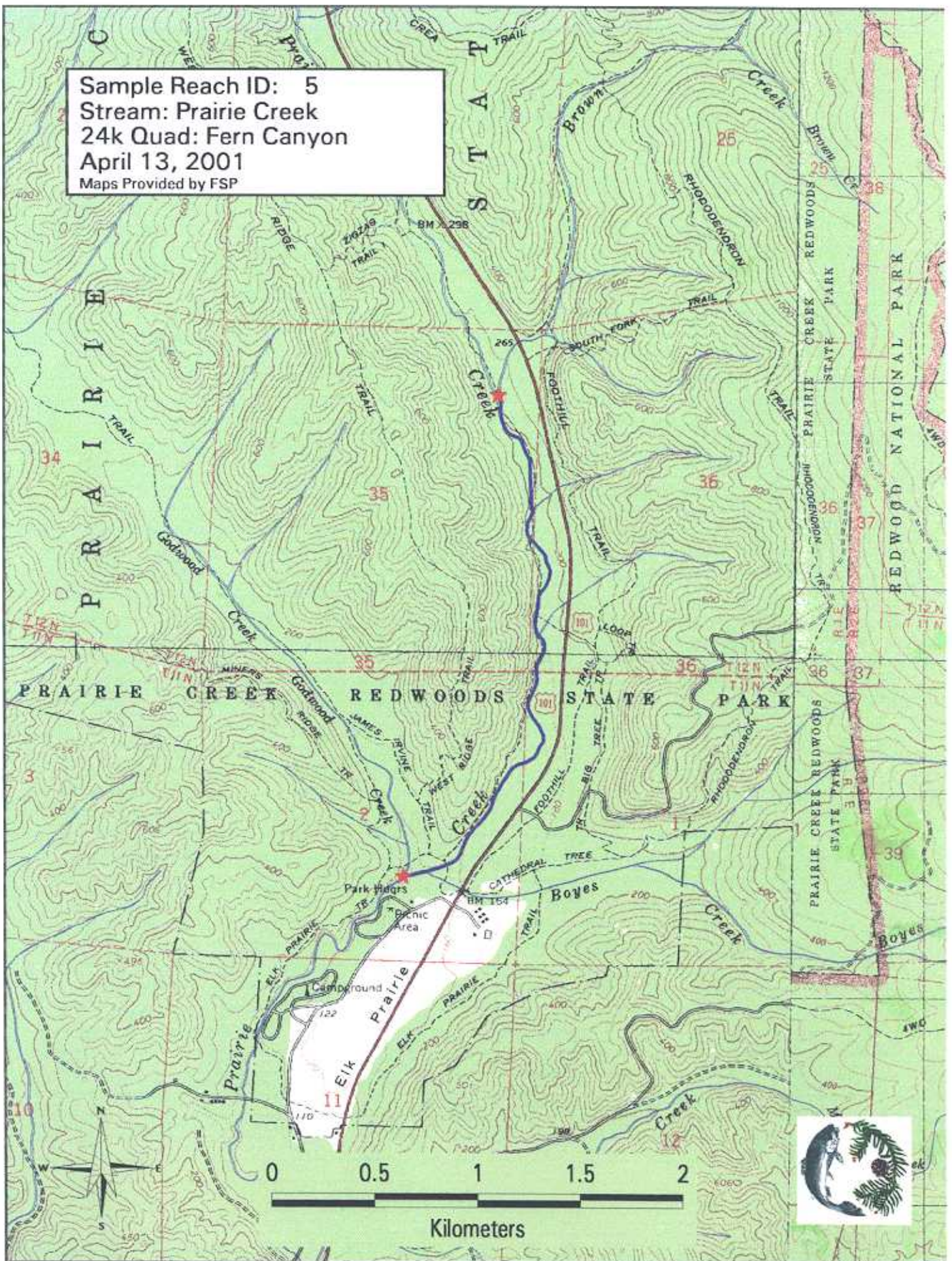
## **APPENDIX F.**

### **MAPS OF SURVEY REACH LOCATIONS AND GPS POINTS**

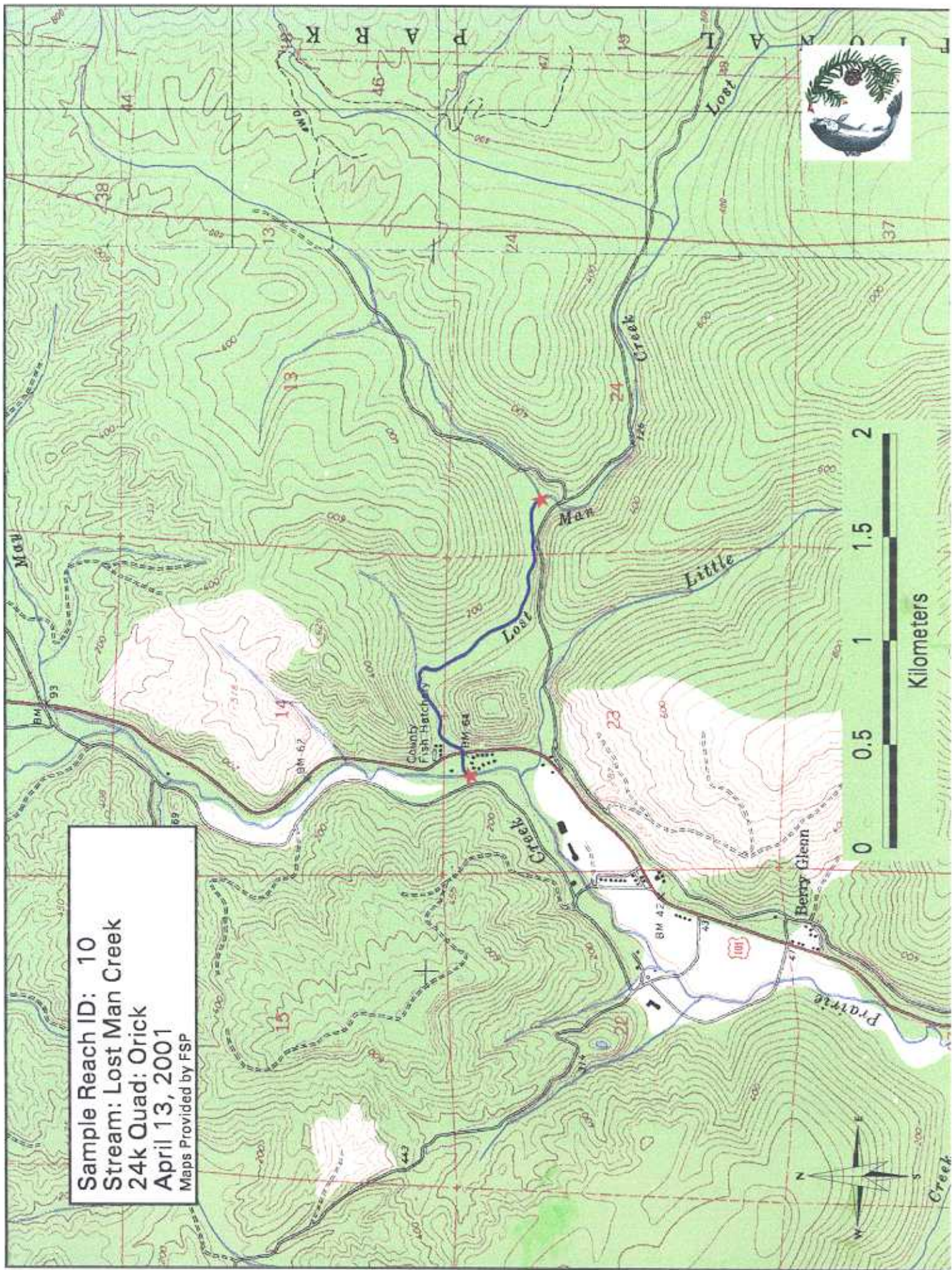
**2001**

**MAPS OF STREAM REACHES SURVEYED  
USING THE IFWM STREAM REACH SAMPLING PROTOCOL**

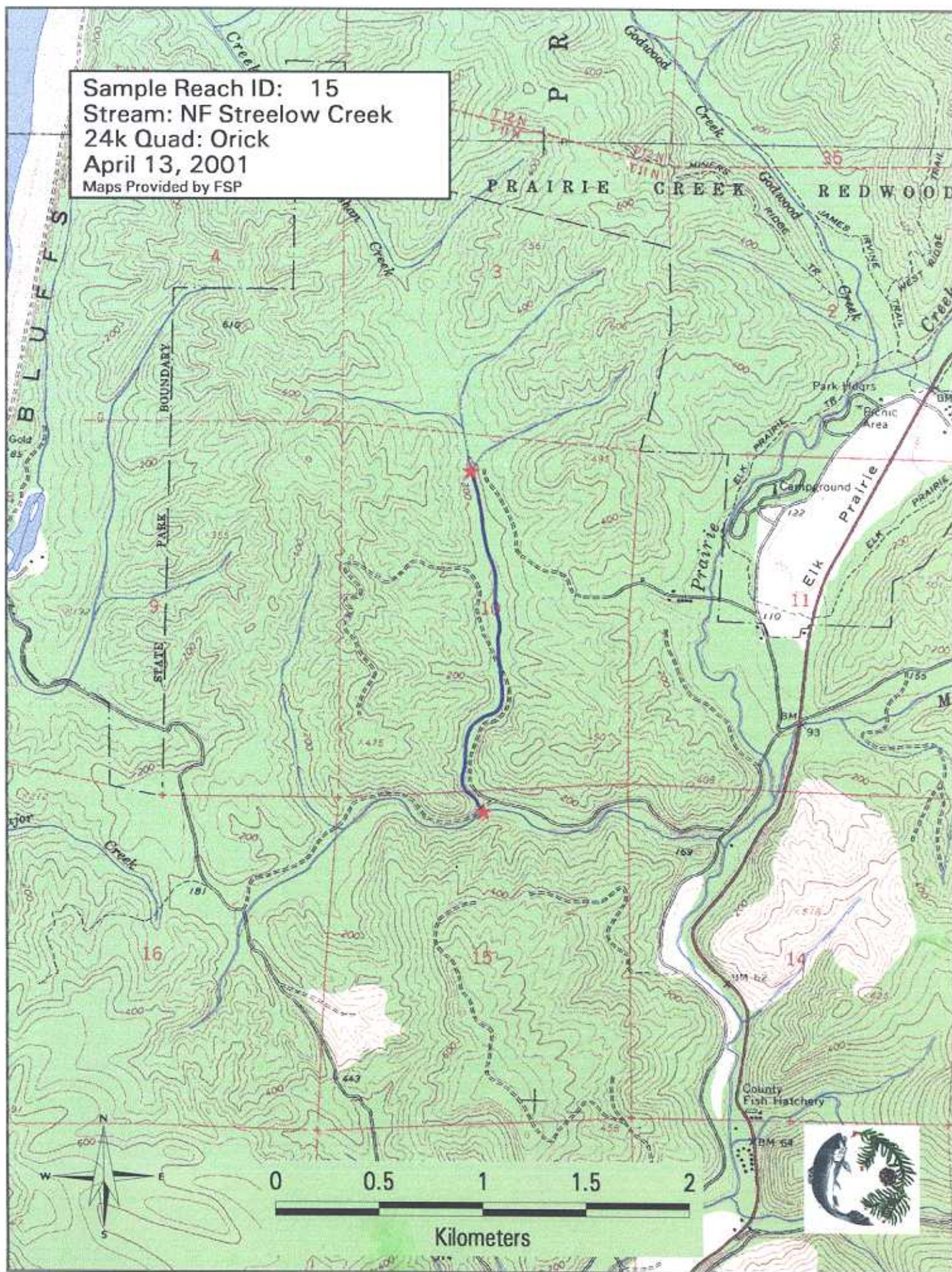
Sample Reach ID: 5  
Stream: Prairie Creek  
24k Quad: Fern Canyon  
April 13, 2001  
Maps Provided by FSP



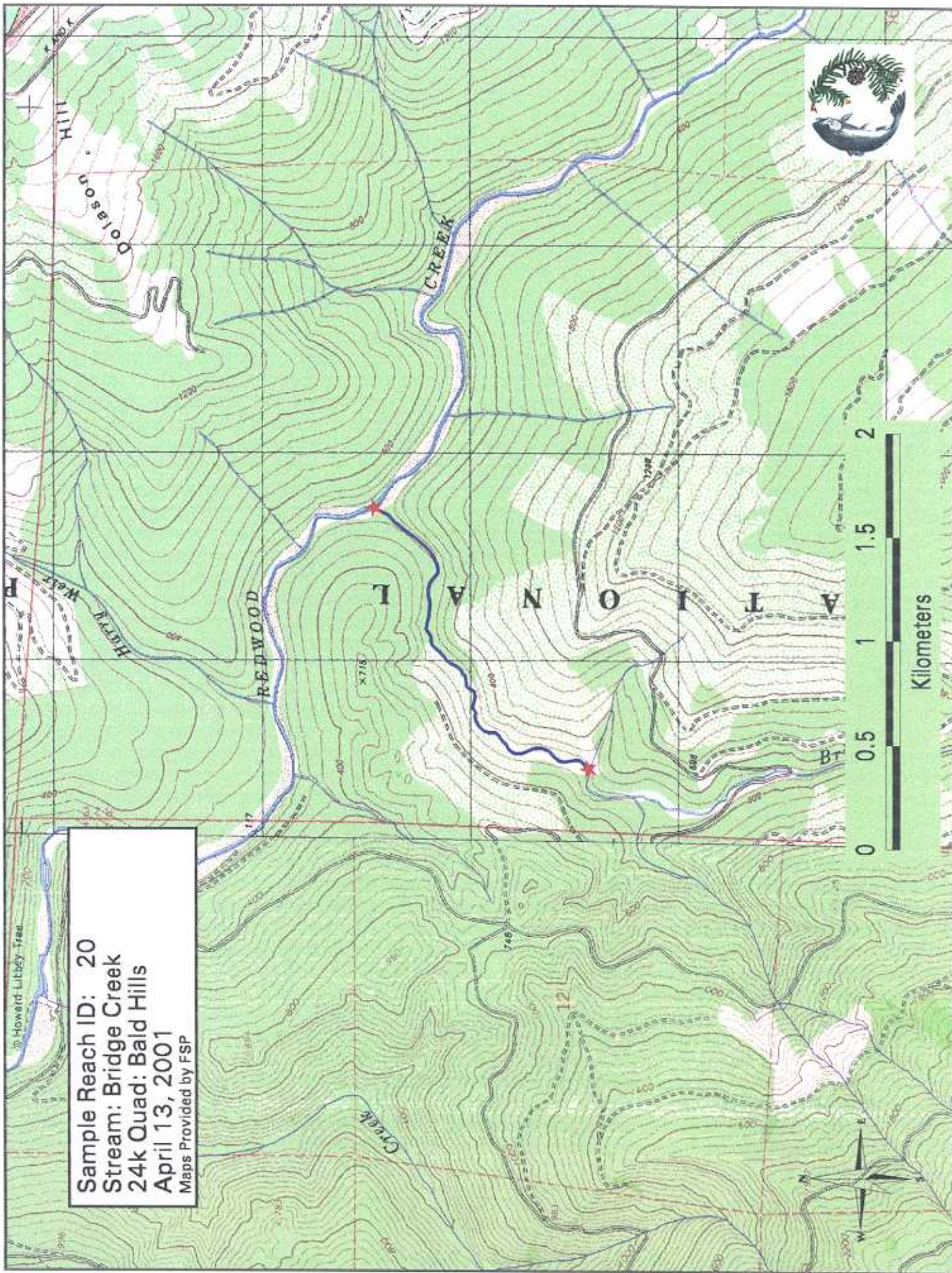
Sample Reach ID: 10  
Stream: Lost Man Creek  
24k Quad: Orick  
April 13, 2001  
Maps Provided by FSP



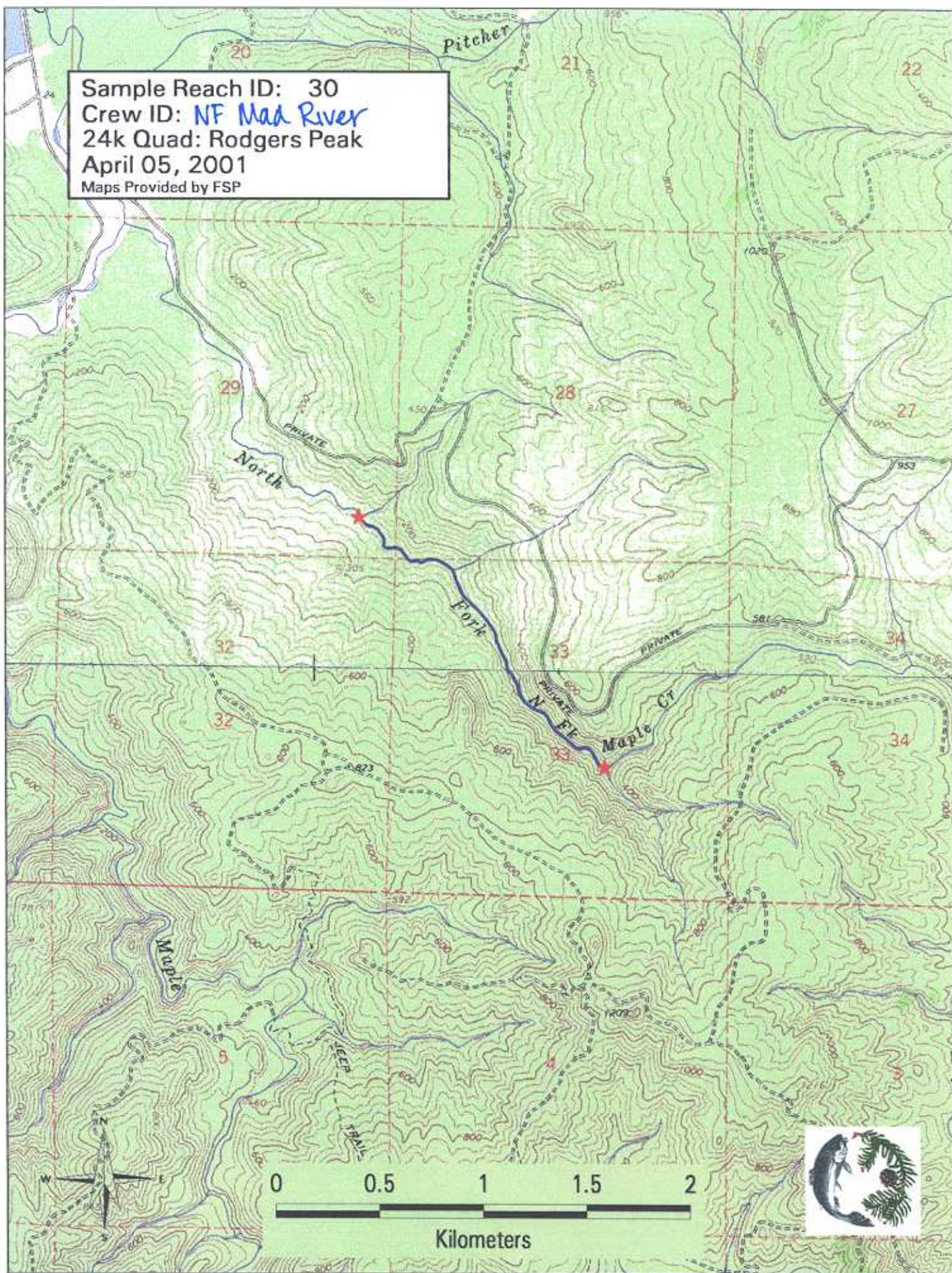
Sample Reach ID: 15  
Stream: NF Streeflow Creek  
24k Quad: Orick  
April 13, 2001  
Maps Provided by FSP



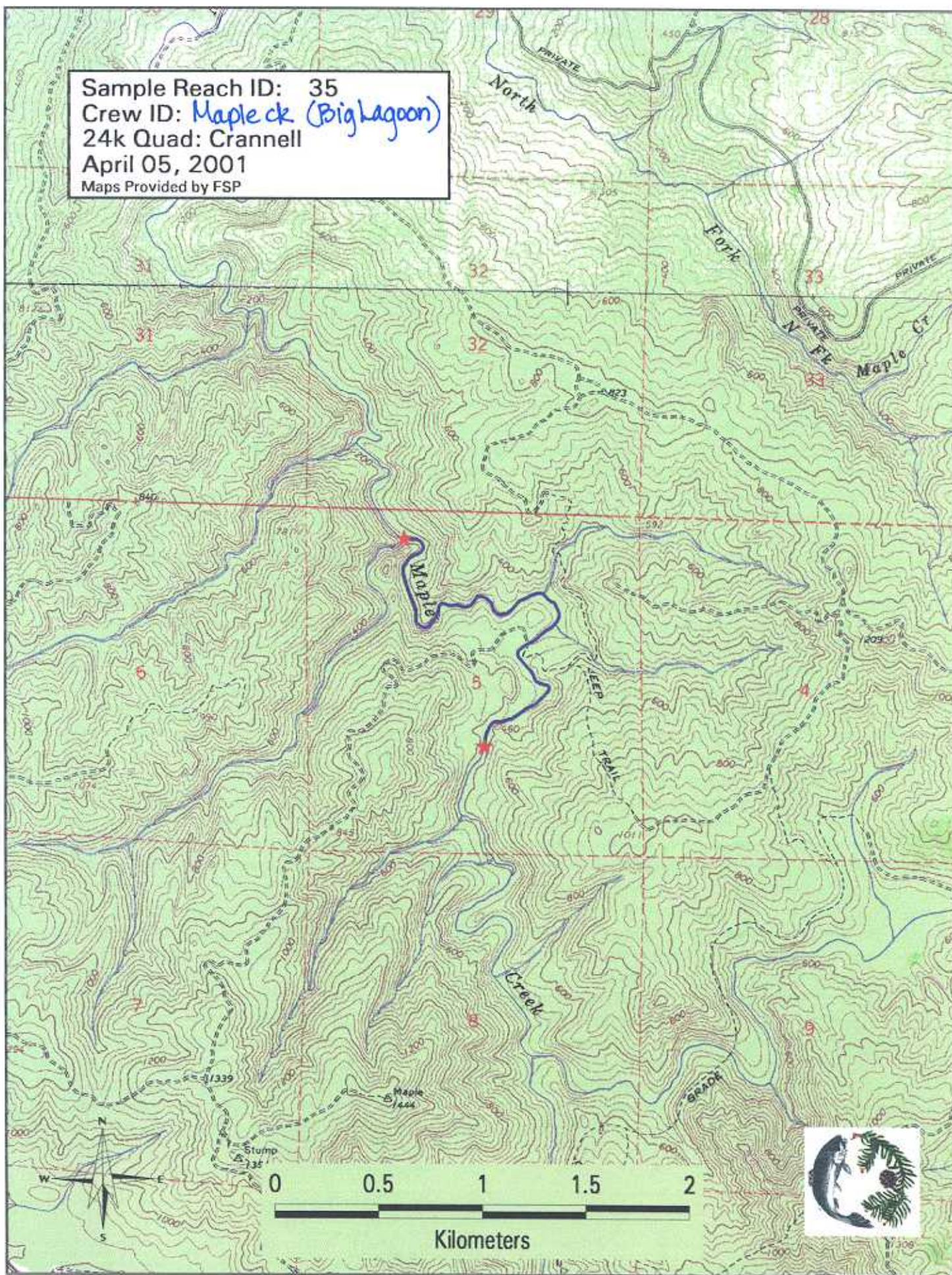
Sample Reach ID: 20  
Stream: Bridge Creek  
24k Quad: Bald Hills  
April 13, 2001  
Maps Provided by FSP



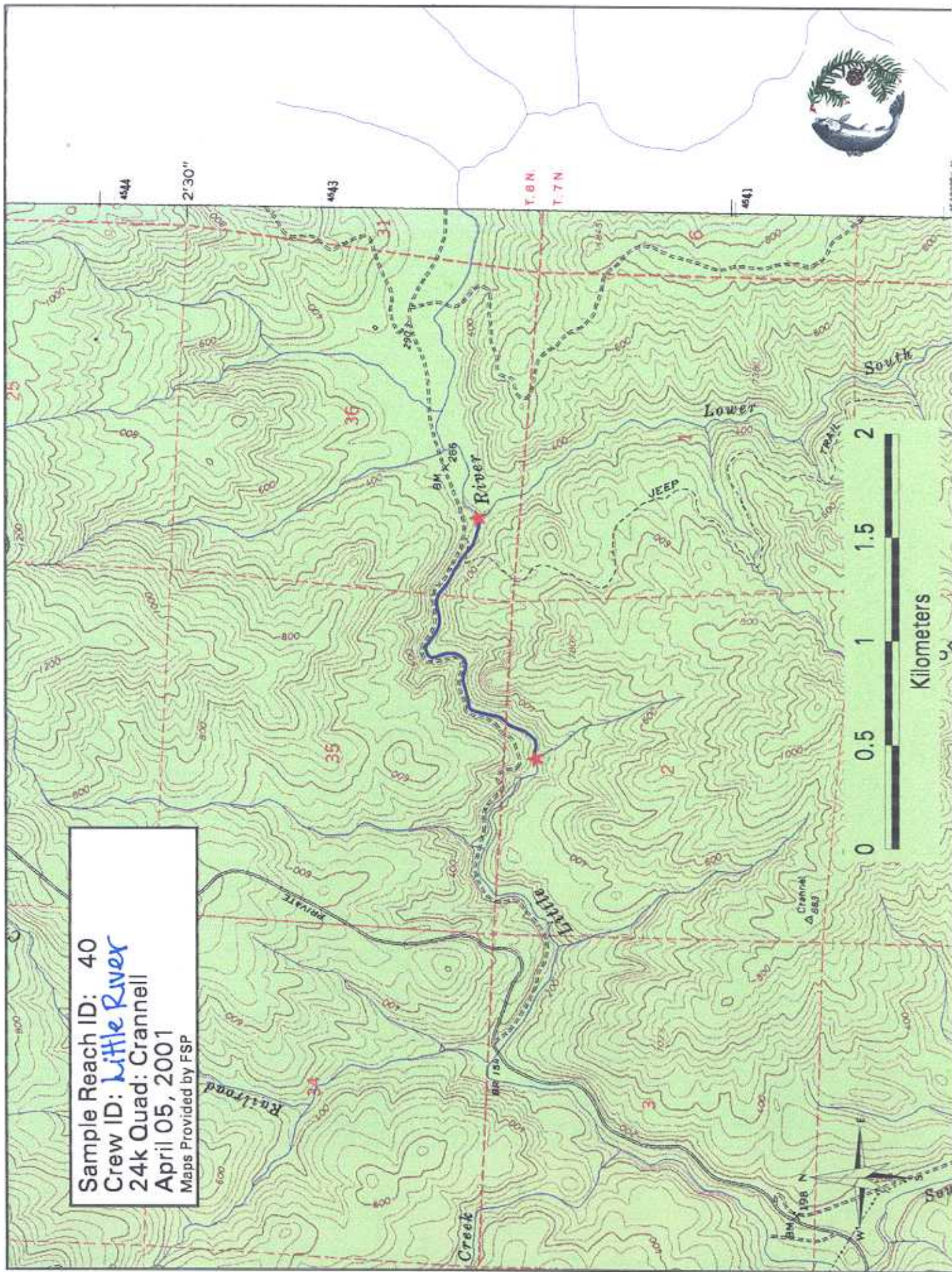
Sample Reach ID: 30  
Crew ID: *NF Mad River*  
24k Quad: Rodgers Peak  
April 05, 2001  
Maps Provided by FSP



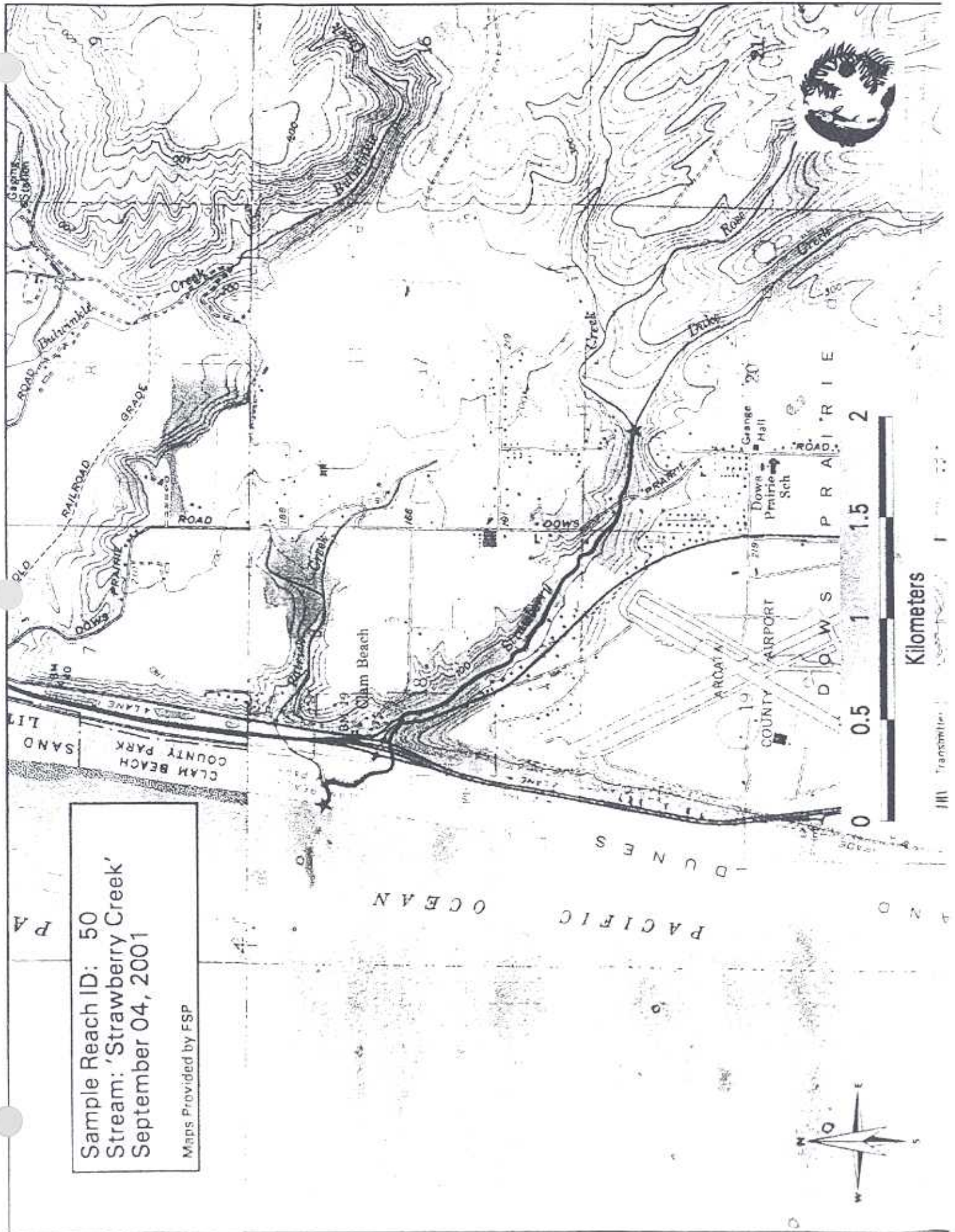
Sample Reach ID: 35  
Crew ID: *Maple ck (Biglagoon)*  
24k Quad: Crannell  
April 05, 2001  
Maps Provided by FSP



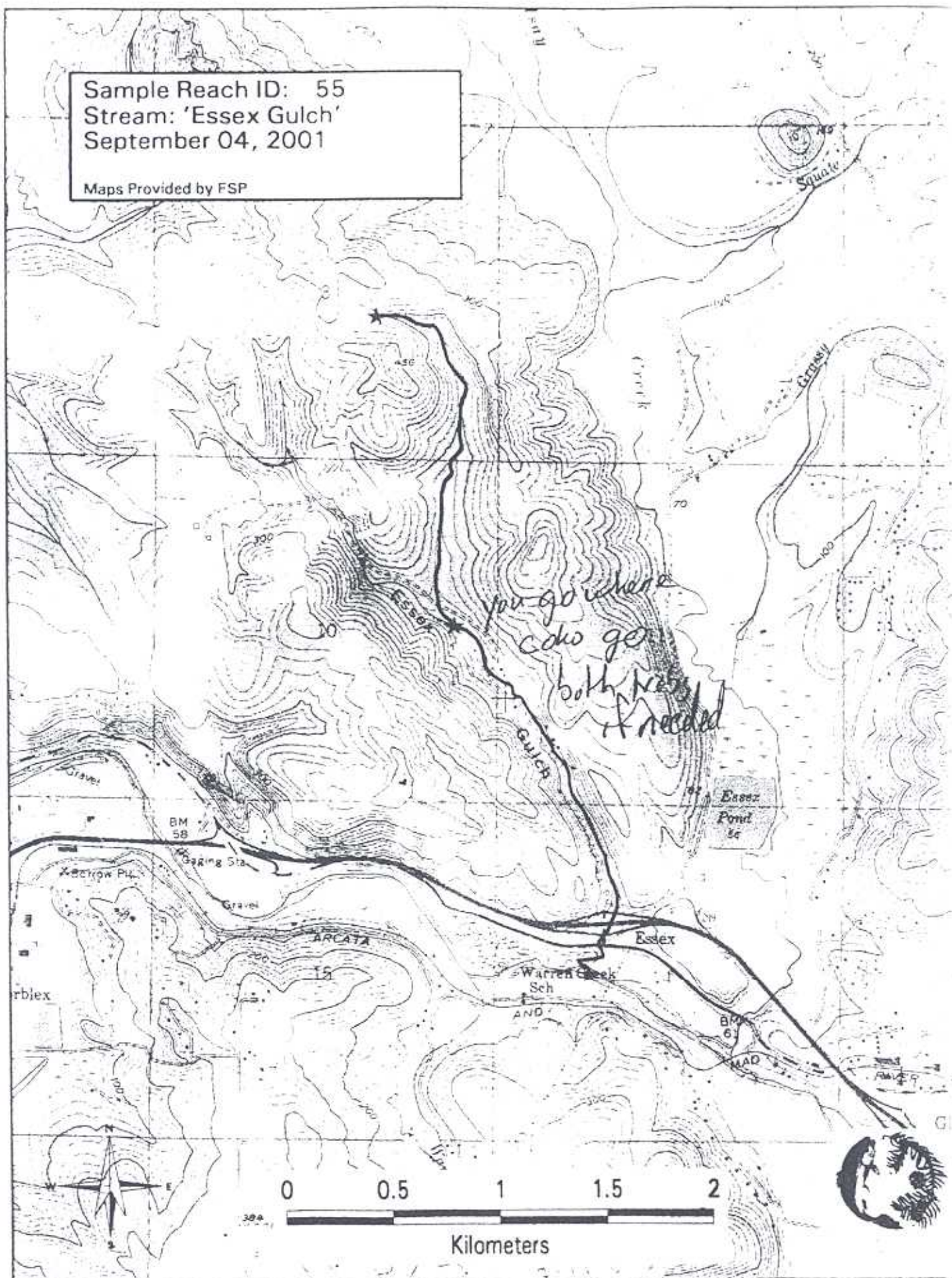
Sample Reach ID: 40  
Crew ID: *Little River*  
24k Quad: Crannell  
April 05, 2001  
Maps Provided by FSP



# Strawberry Creek

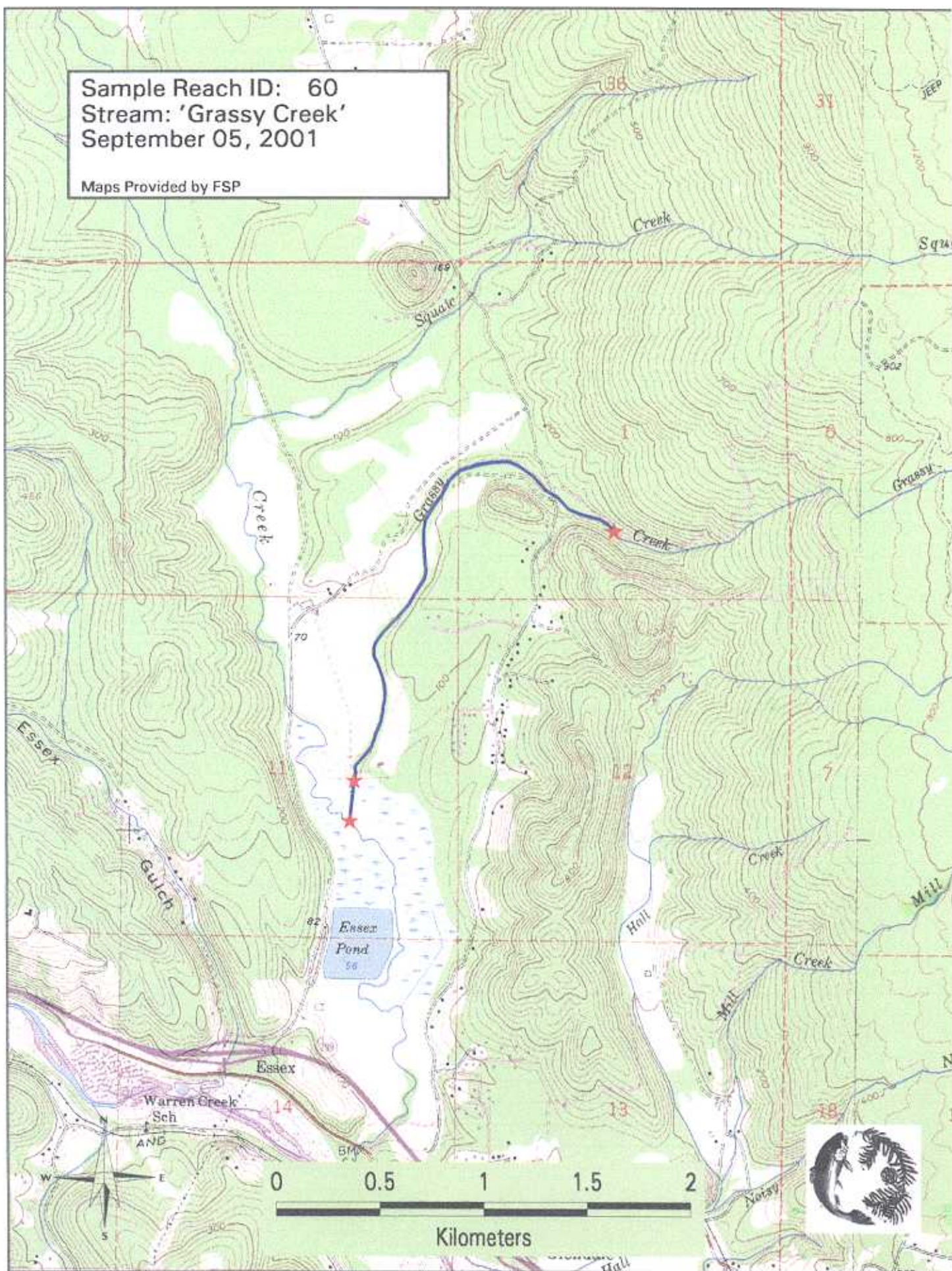


Maps Provided by FSP



Sample Reach ID: 60  
Stream: 'Grassy Creek'  
September 05, 2001

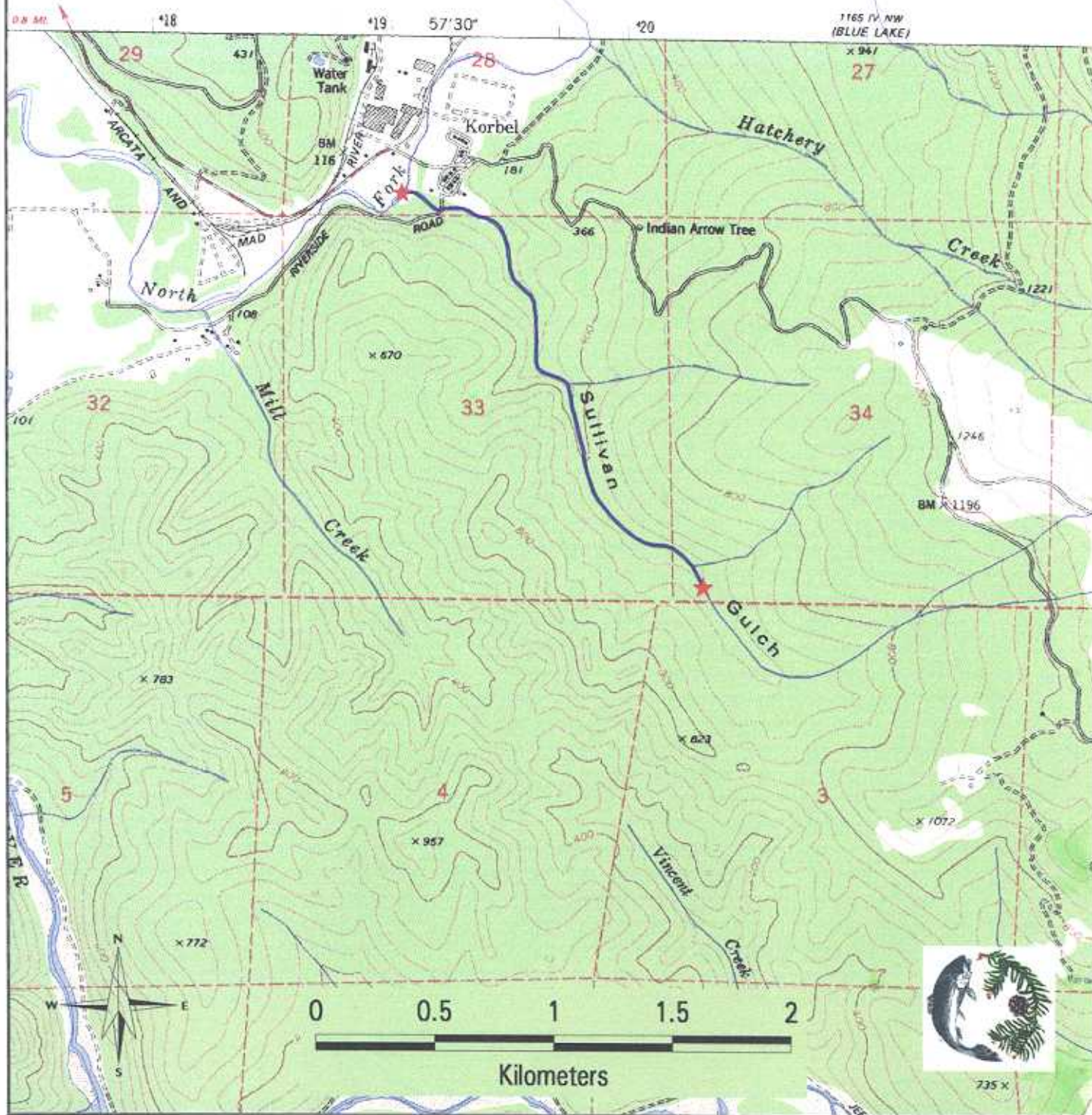
Maps Provided by FSP



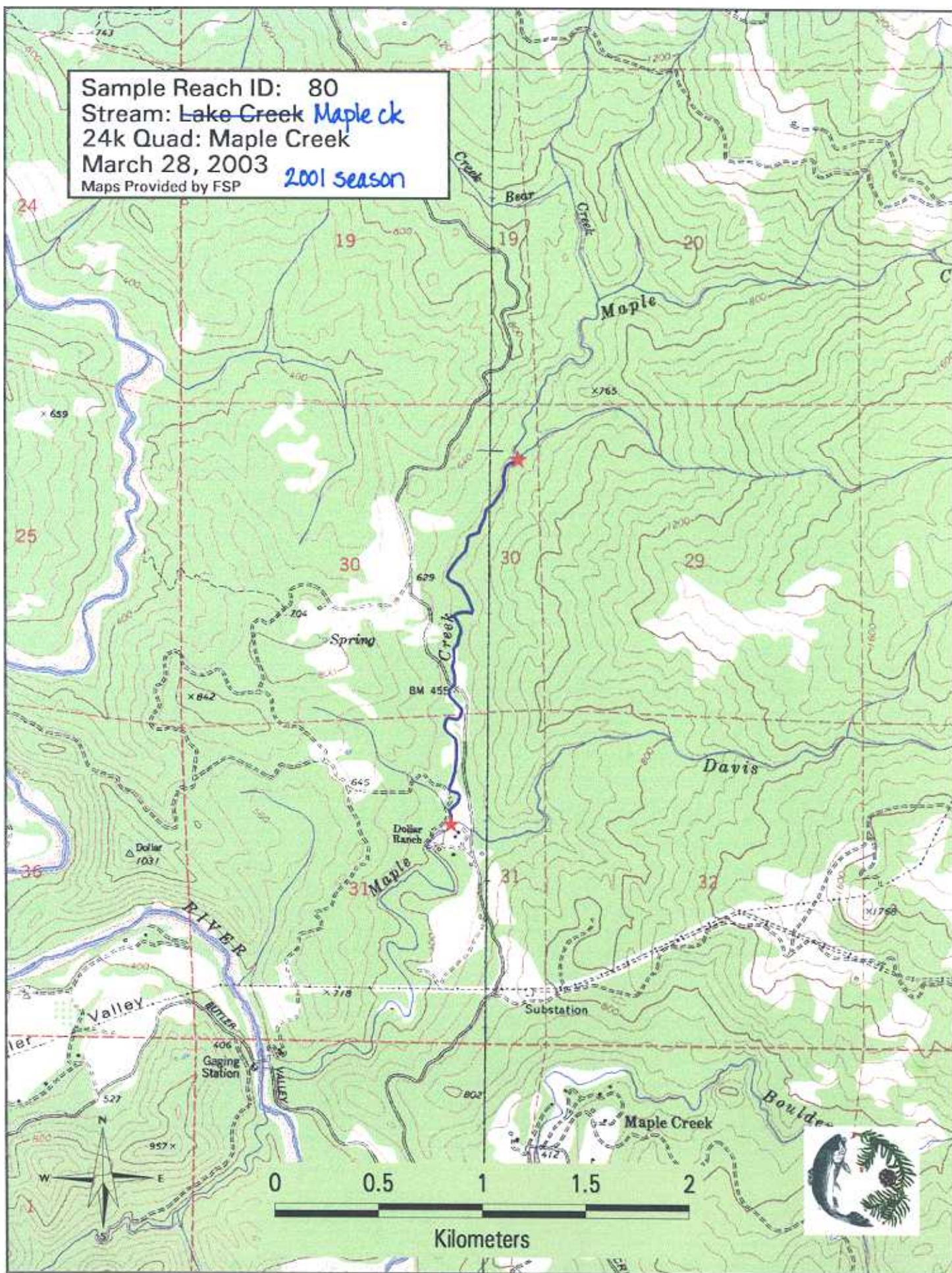
Sample Reach ID: 75  
Crew ID: *Sullivan Gulch*  
24k Quad: Korbelt  
April 05, 2001  
Maps Provided by FSP



OR

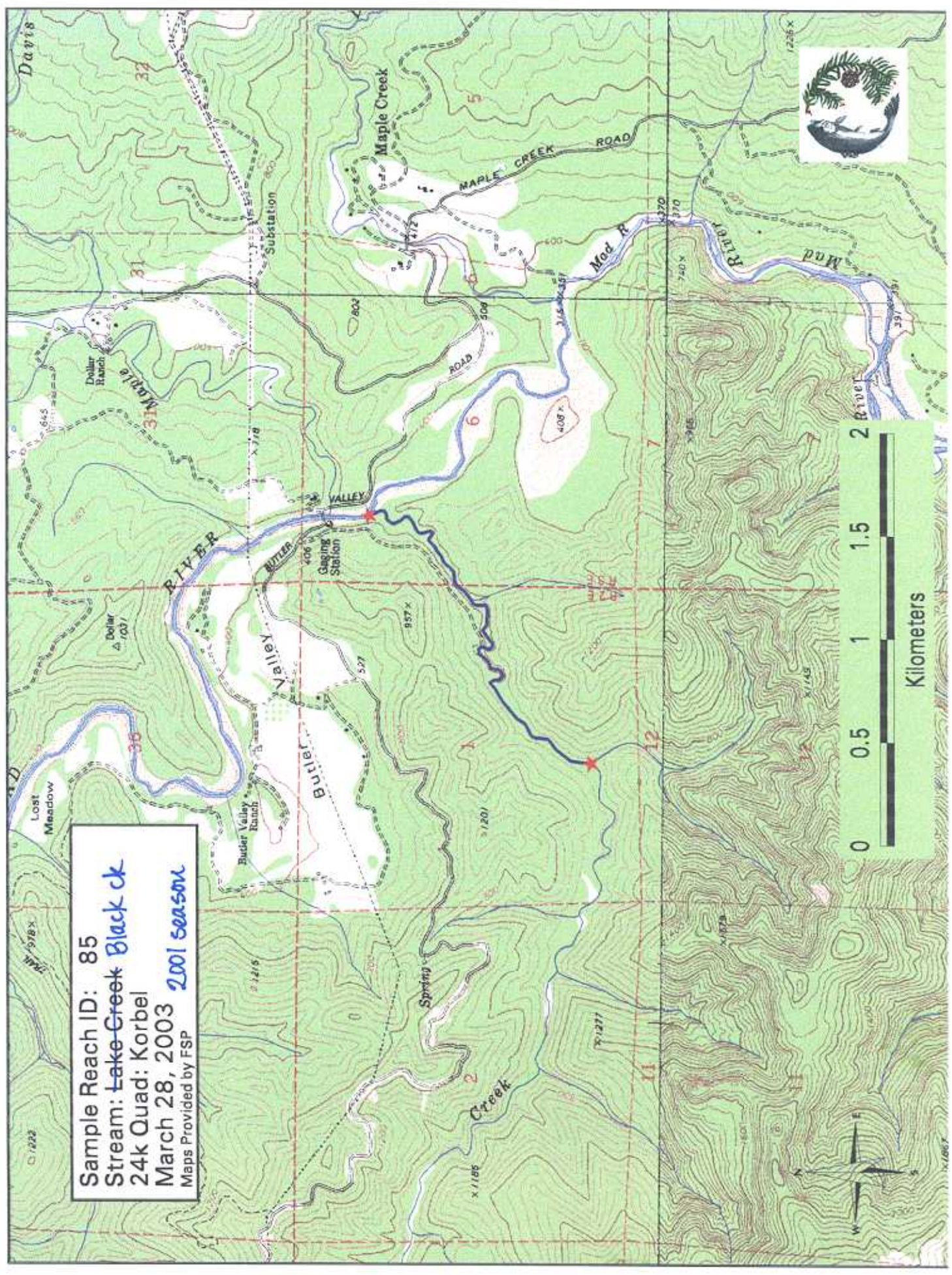


Sample Reach ID: 80  
Stream: ~~Lake Creek~~ Maple ck  
24k Quad: Maple Creek  
March 28, 2003  
Maps Provided by FSP 2001 season

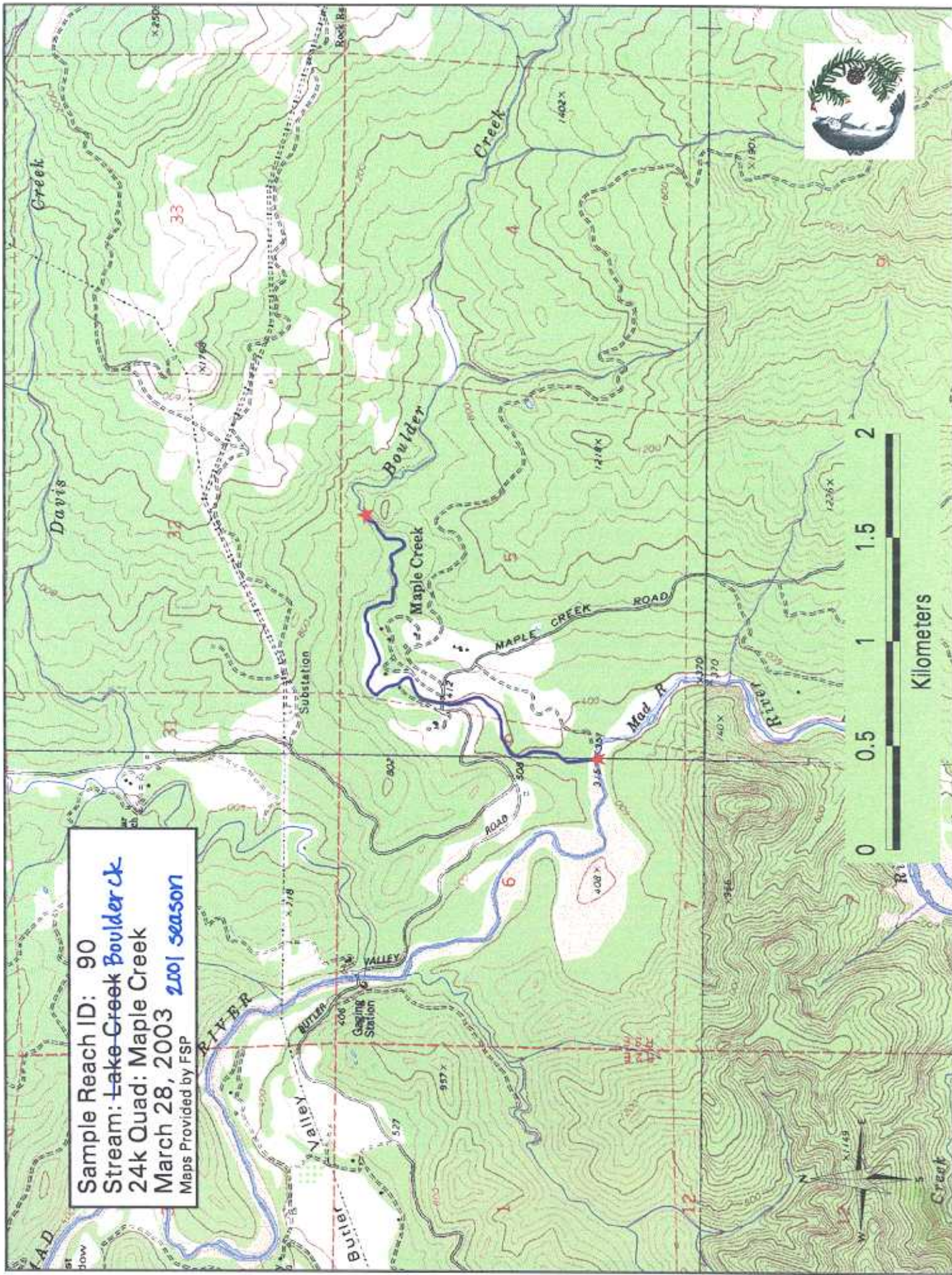


Sample Reach ID: 85  
Stream: Lake-Creek Black ck  
24k Quad: Korbel  
March 28, 2003  
Maps Provided by FSP

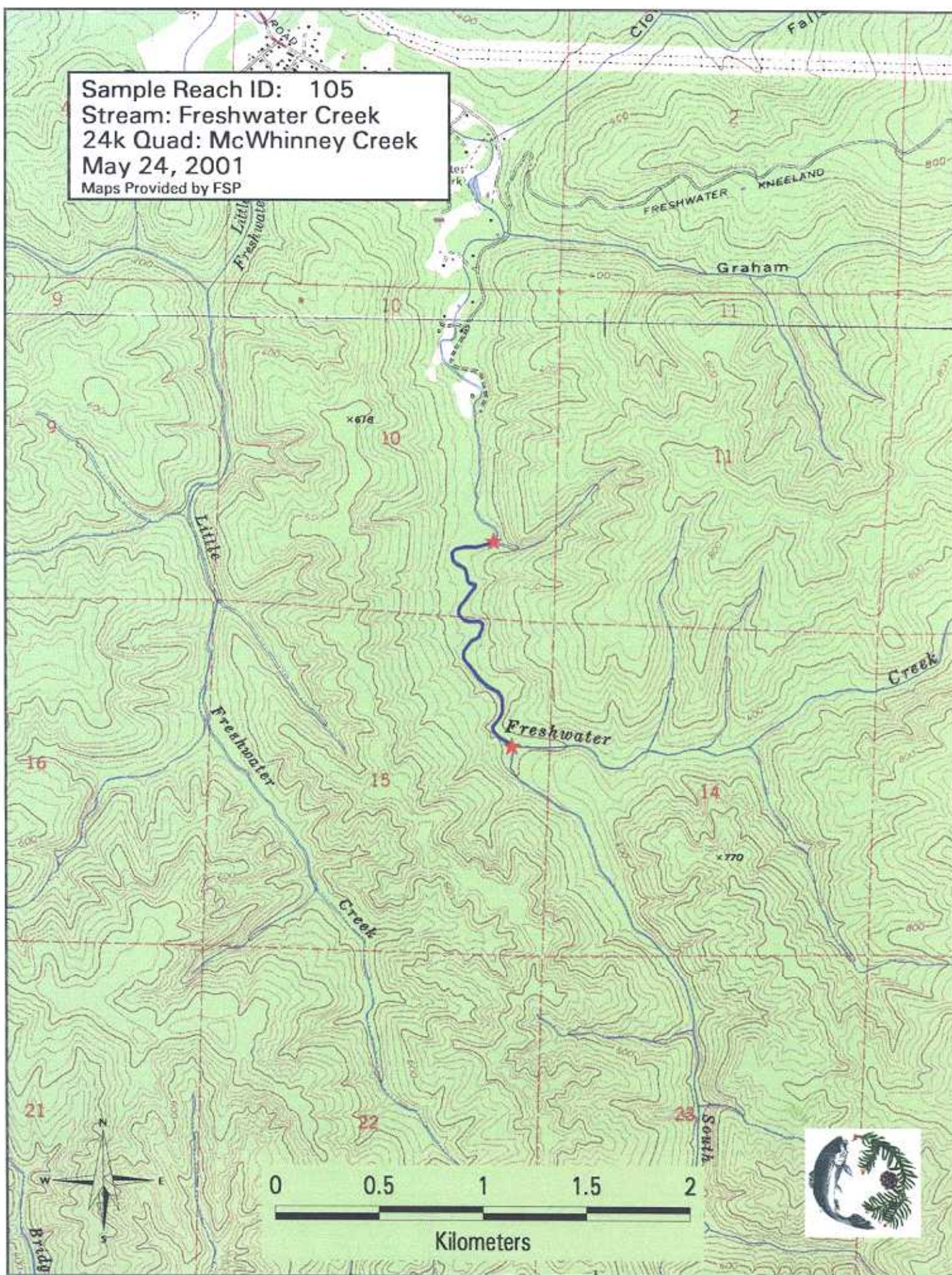
2001 season



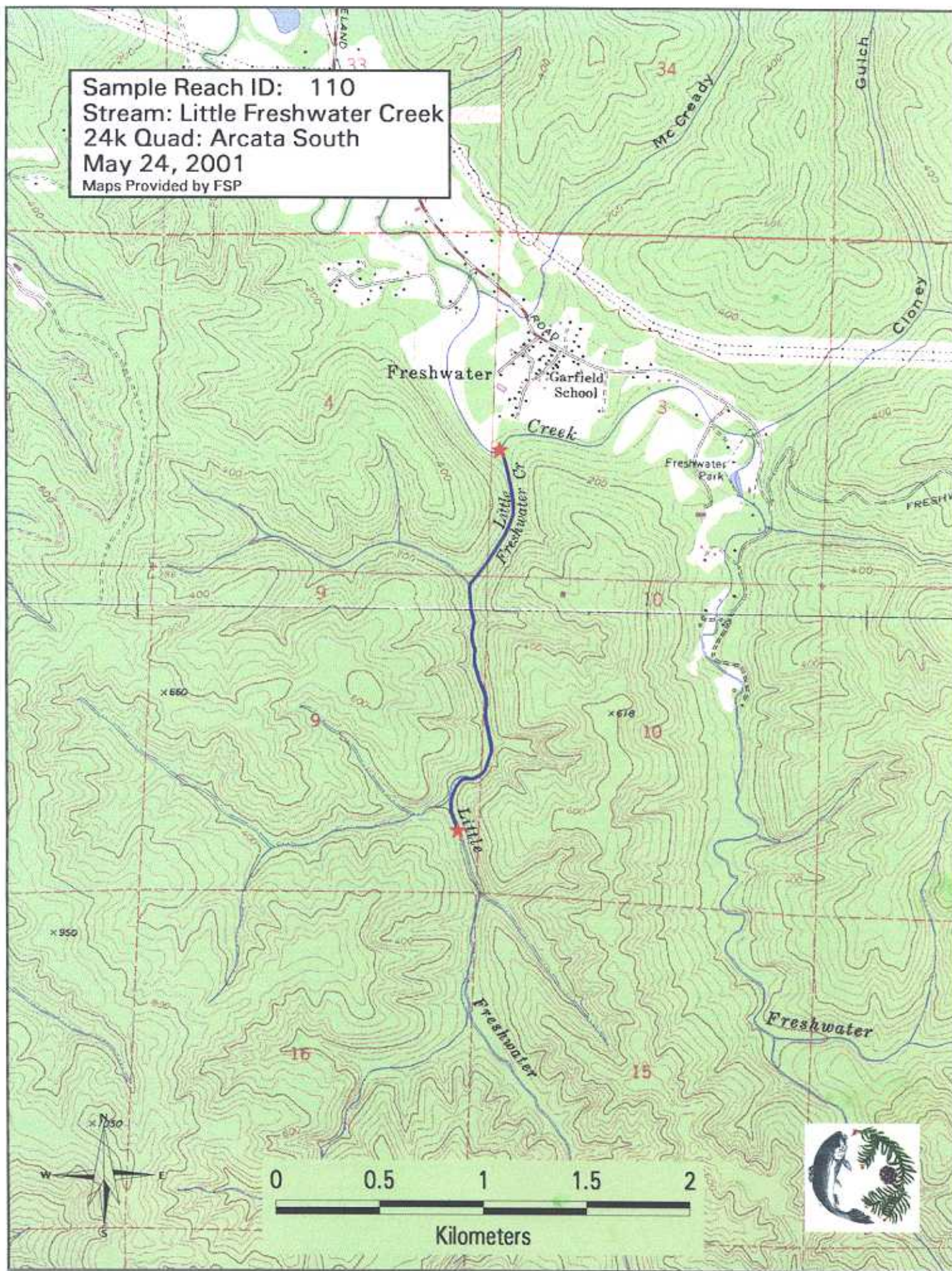
Sample Reach ID: 90  
Stream: Lake-Creek Boulderck  
24k Quad: Maple Creek  
March 28, 2003 2001 season  
Maps Provided by FSP



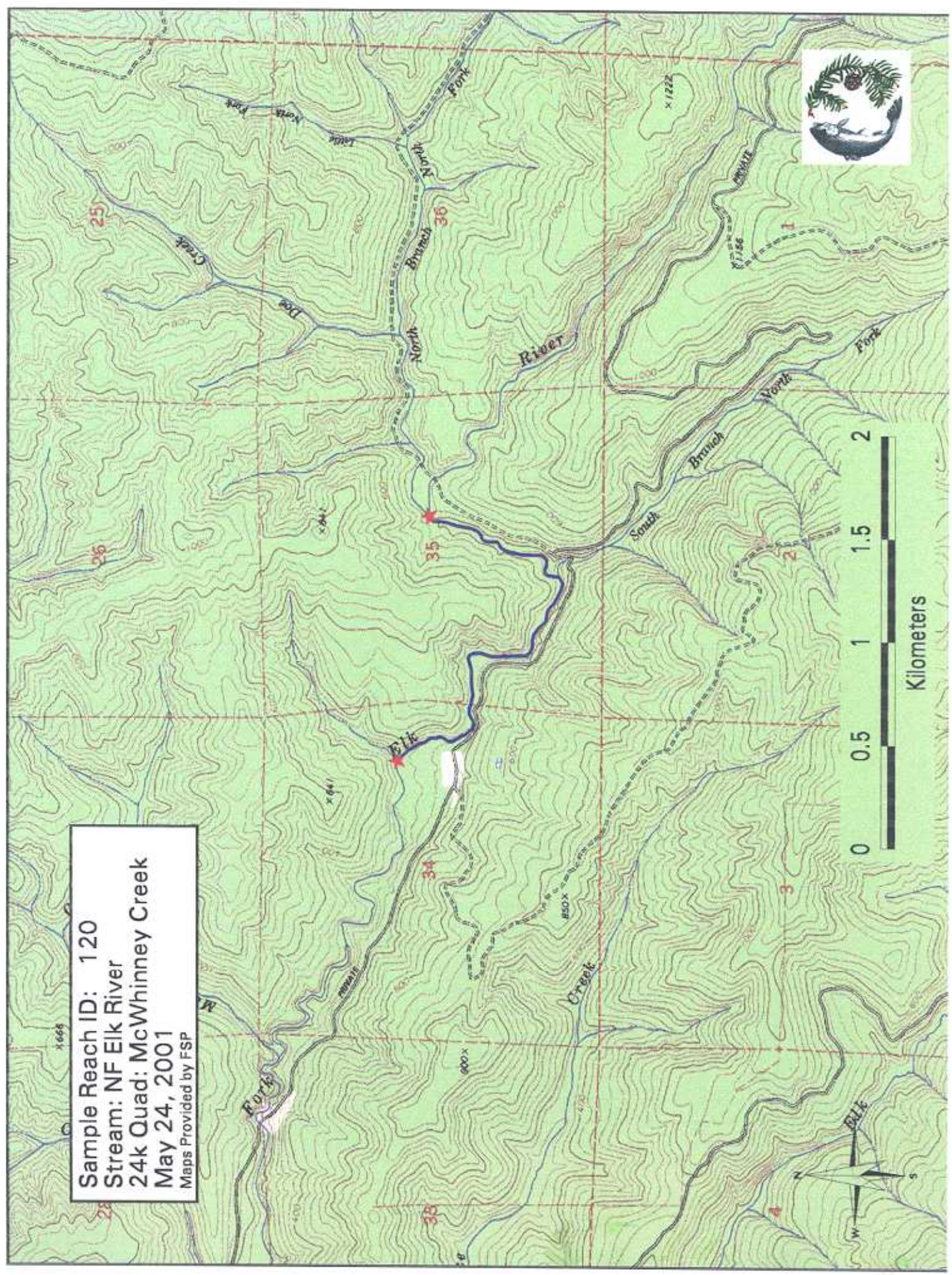
Sample Reach ID: 105  
Stream: Freshwater Creek  
24k Quad: McWhinney Creek  
May 24, 2001  
Maps Provided by FSP



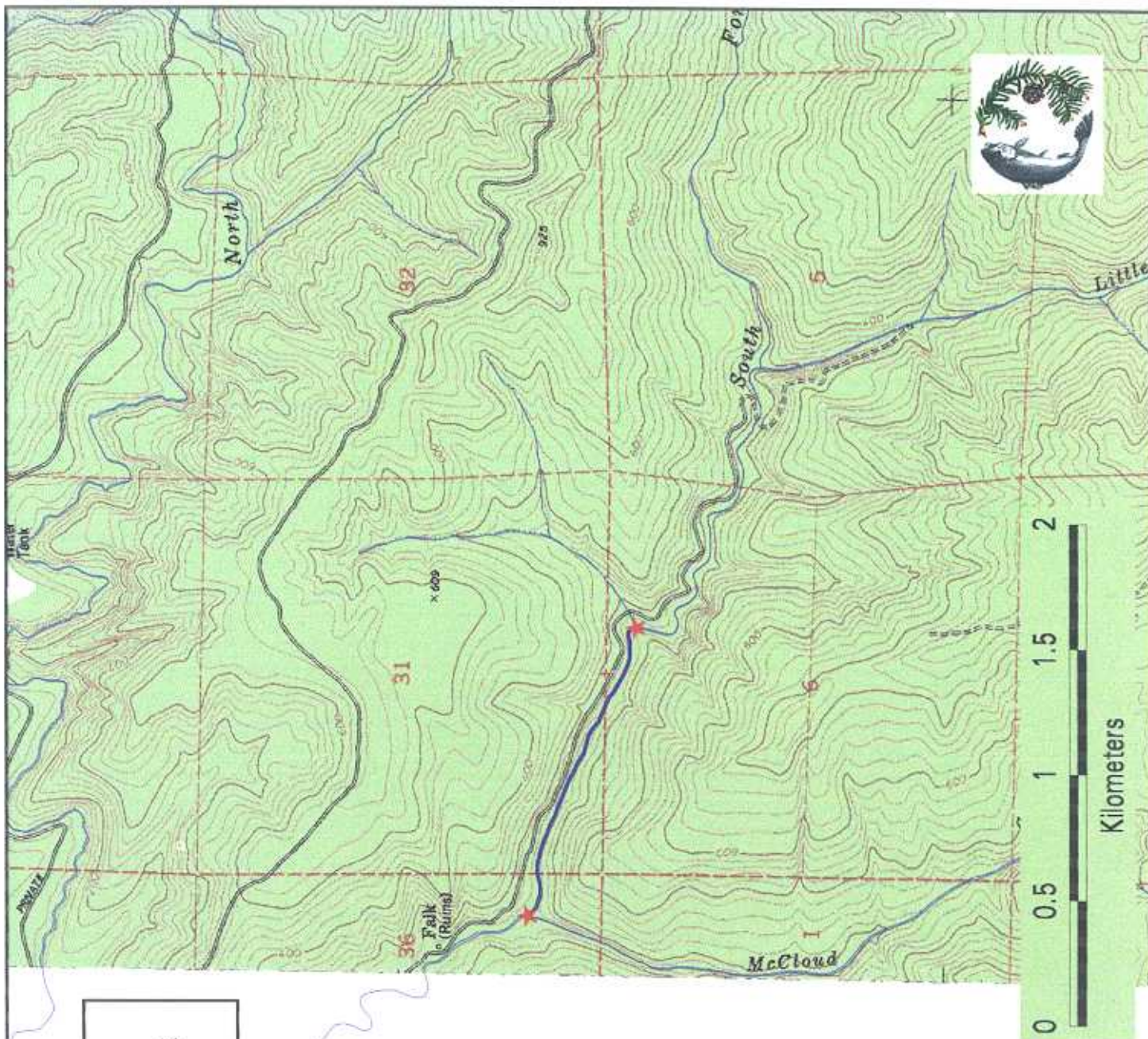
Sample Reach ID: 110  
Stream: Little Freshwater Creek  
24k Quad: Arcata South  
May 24, 2001  
Maps Provided by FSP



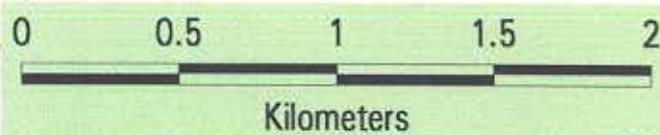
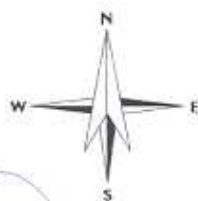
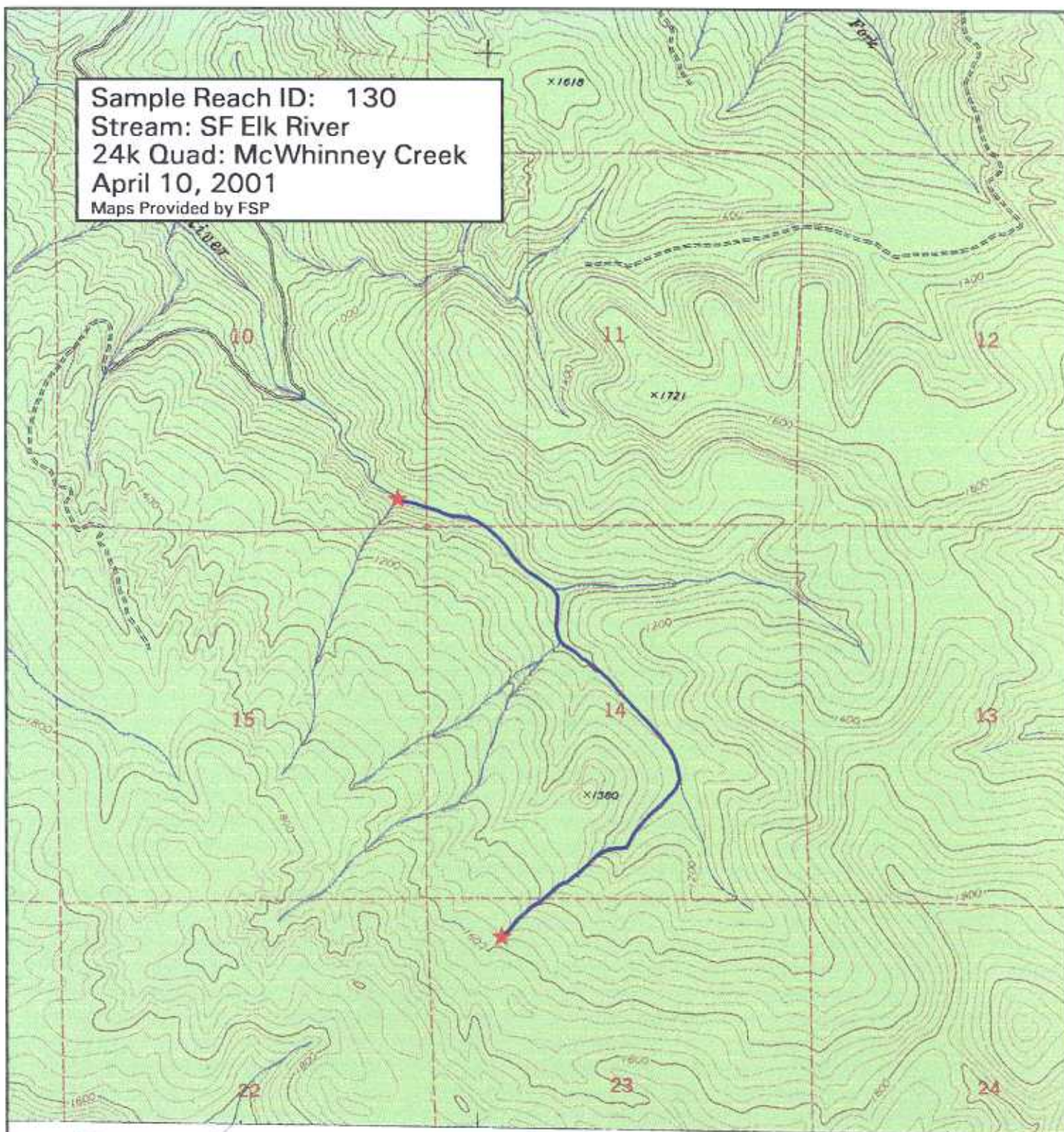
Sample Reach ID: 120  
Stream: NF Elk River  
24k Quad: McWhinney Creek  
May 24, 2001  
Maps Provided by FSP



Sample Reach ID: 125  
Stream: SF Elk River  
24k Quad: McWhinney Creek  
April 10, 2001  
Maps Provided by FSP



Sample Reach ID: 130  
Stream: SF Elk River  
24k Quad: McWhinney Creek  
April 10, 2001  
Maps Provided by FSP



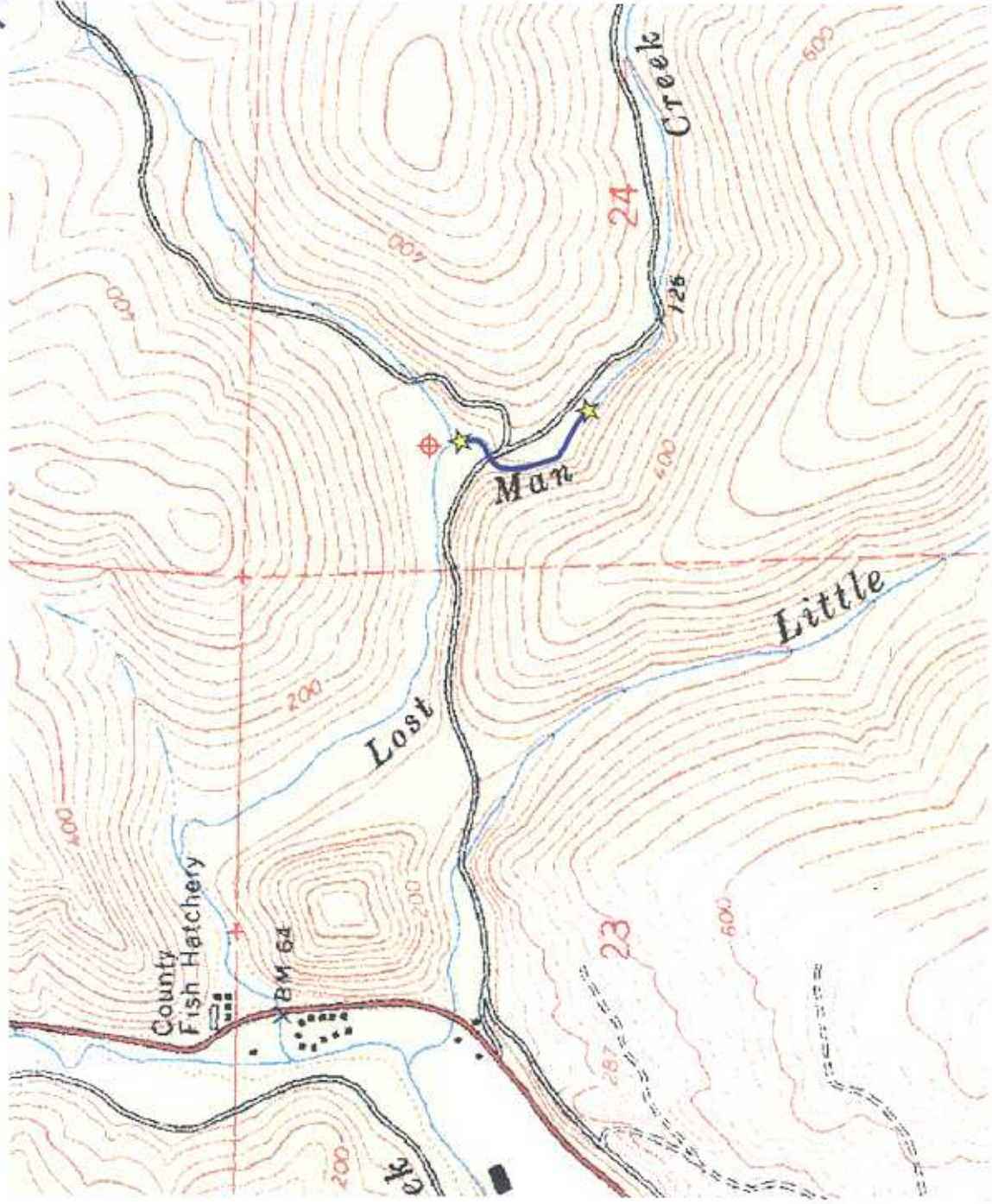
**2002**

**MAPS OF STREAM REACHES SURVEYED  
USING THE DFG TEN POOL PROTOCOL**

# 167 Lost Man Creek

- GPS Point
- Reach Endpoints
- Surveyed Reaches

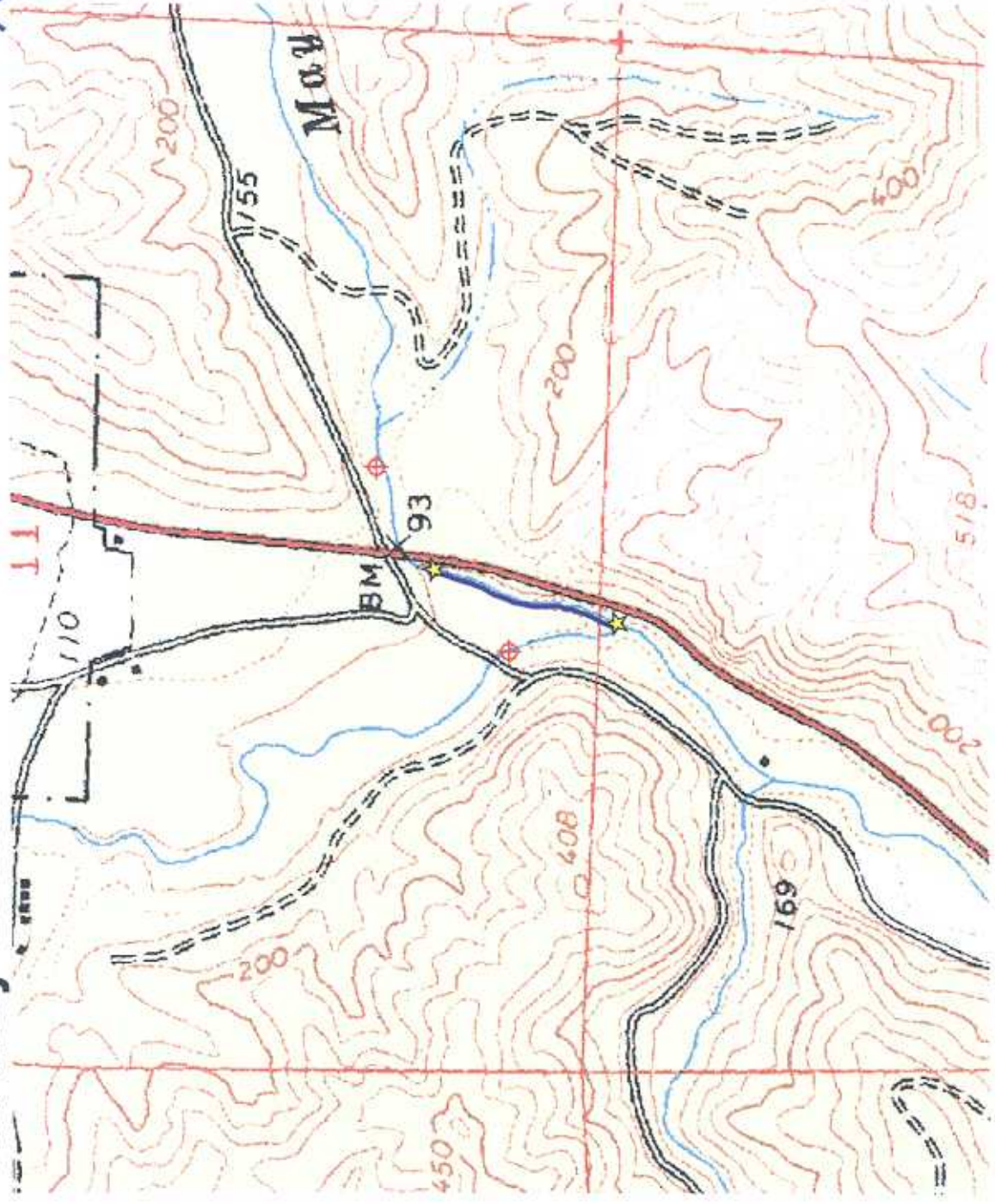
100 0 100 200 300 400 Meters



# 169 May Creek

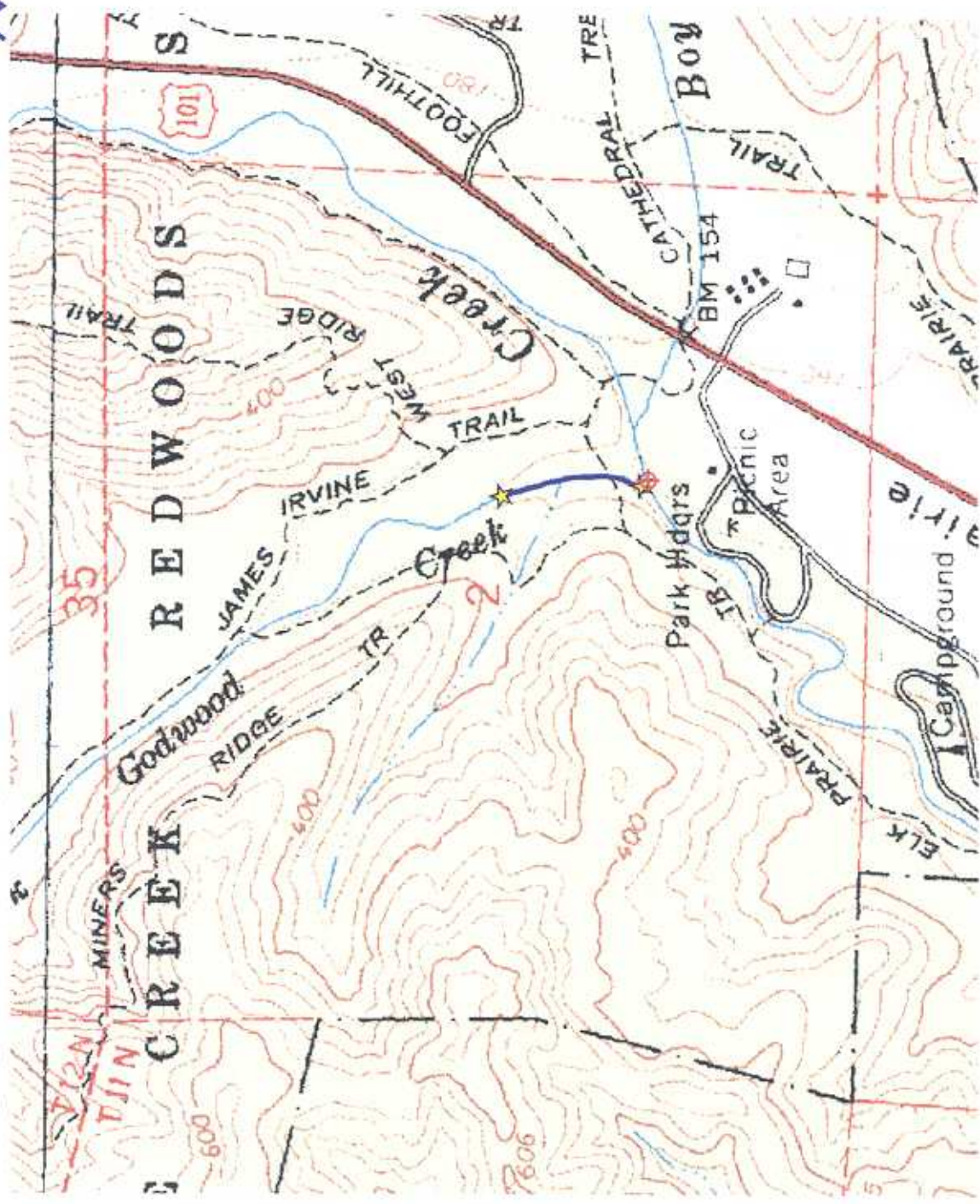
- GPS Point
- Reach Endpoints
- Surveyed Reaches

100 0 100 200 300 400 Meters



# 170 GodwoodCreek

- GPS Point
- Reach Endpoints
- Surveyed Reaches

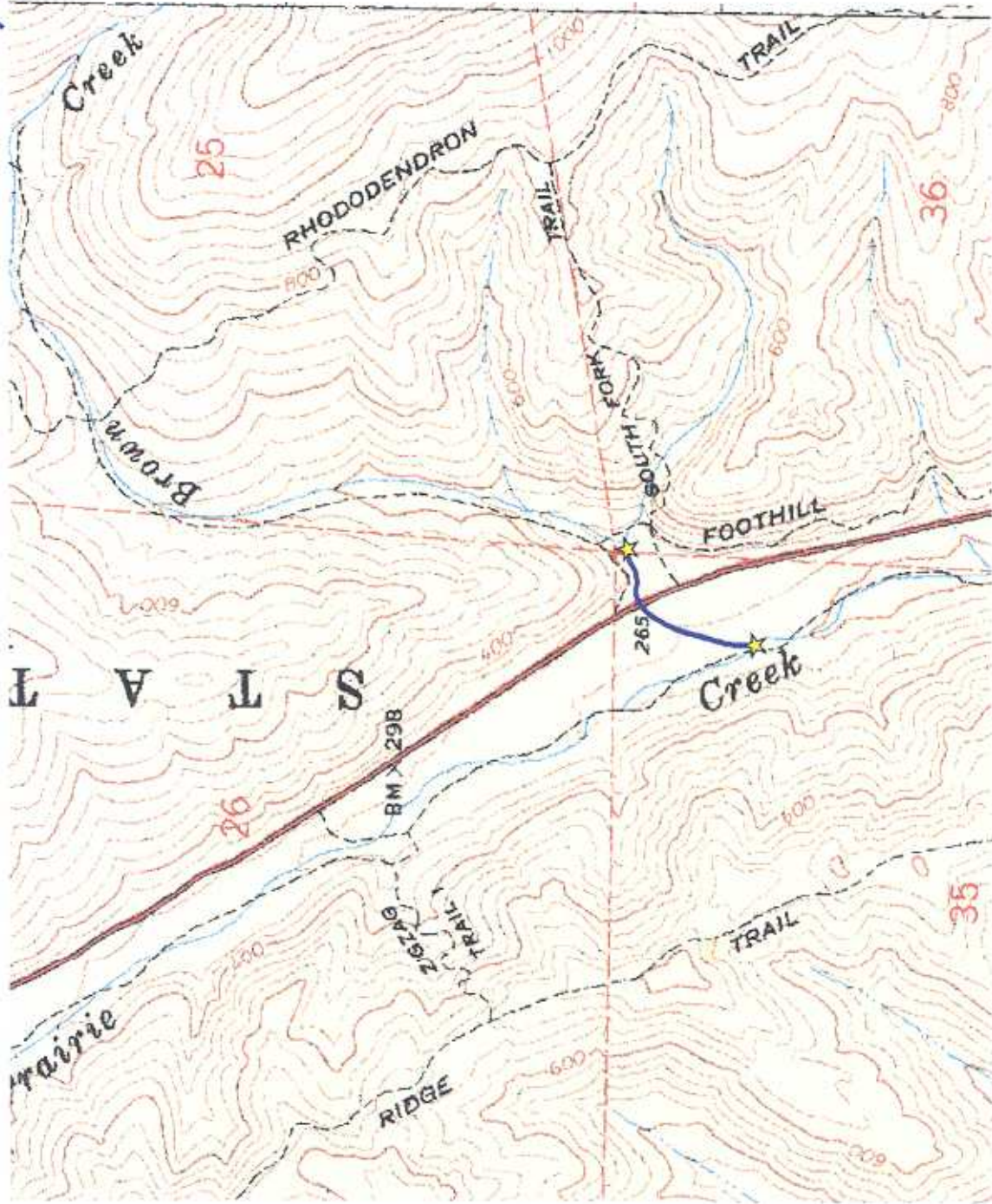


- GPS Point
- Reach Endpoints
- Surveyed Reaches



100 0 100 200 300 400 Meters

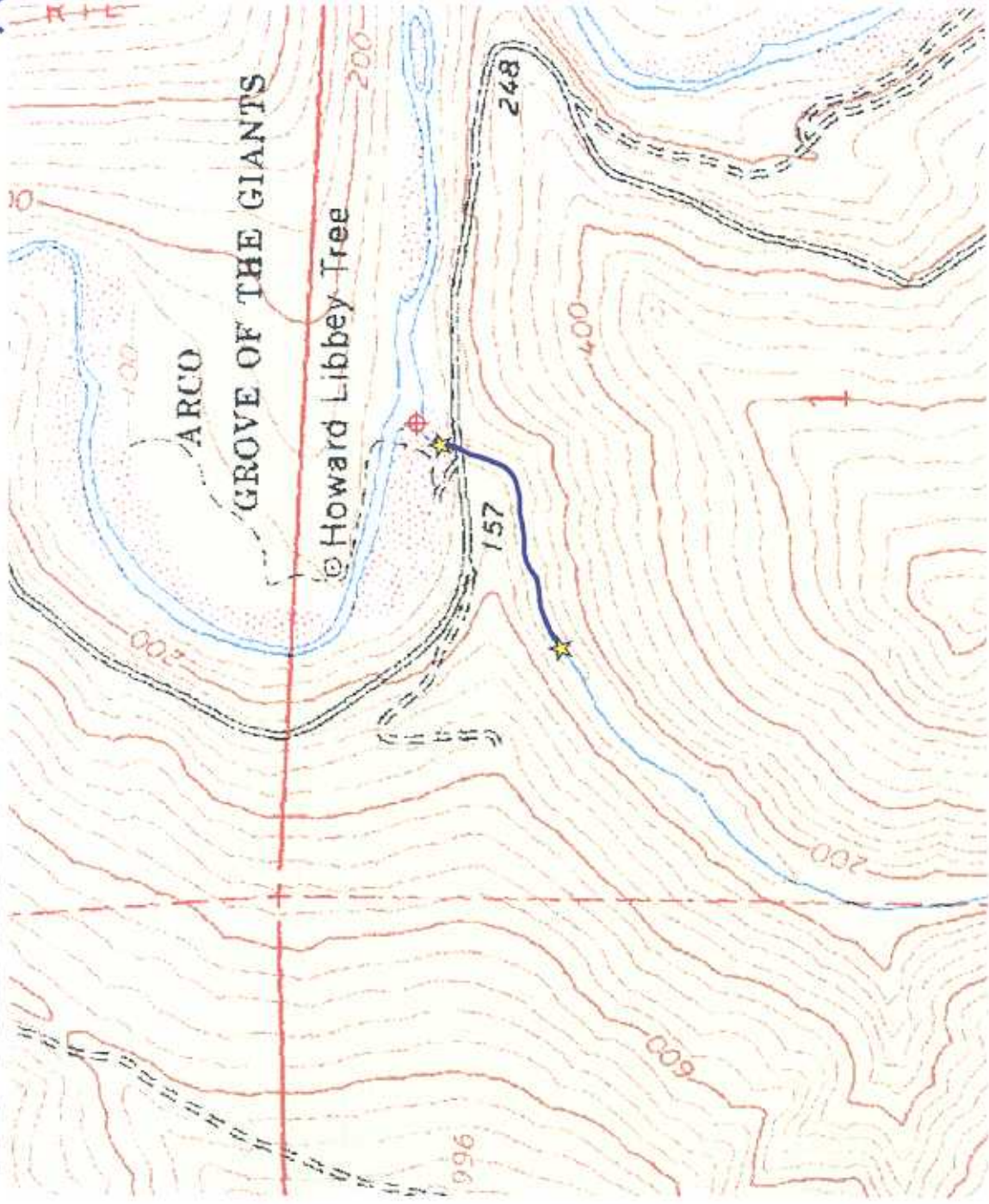
# 172 Brown Creek



# 173 Tom McDonald Creek

- GPS Point
- Reach Endpoints
- Surveyed Reaches

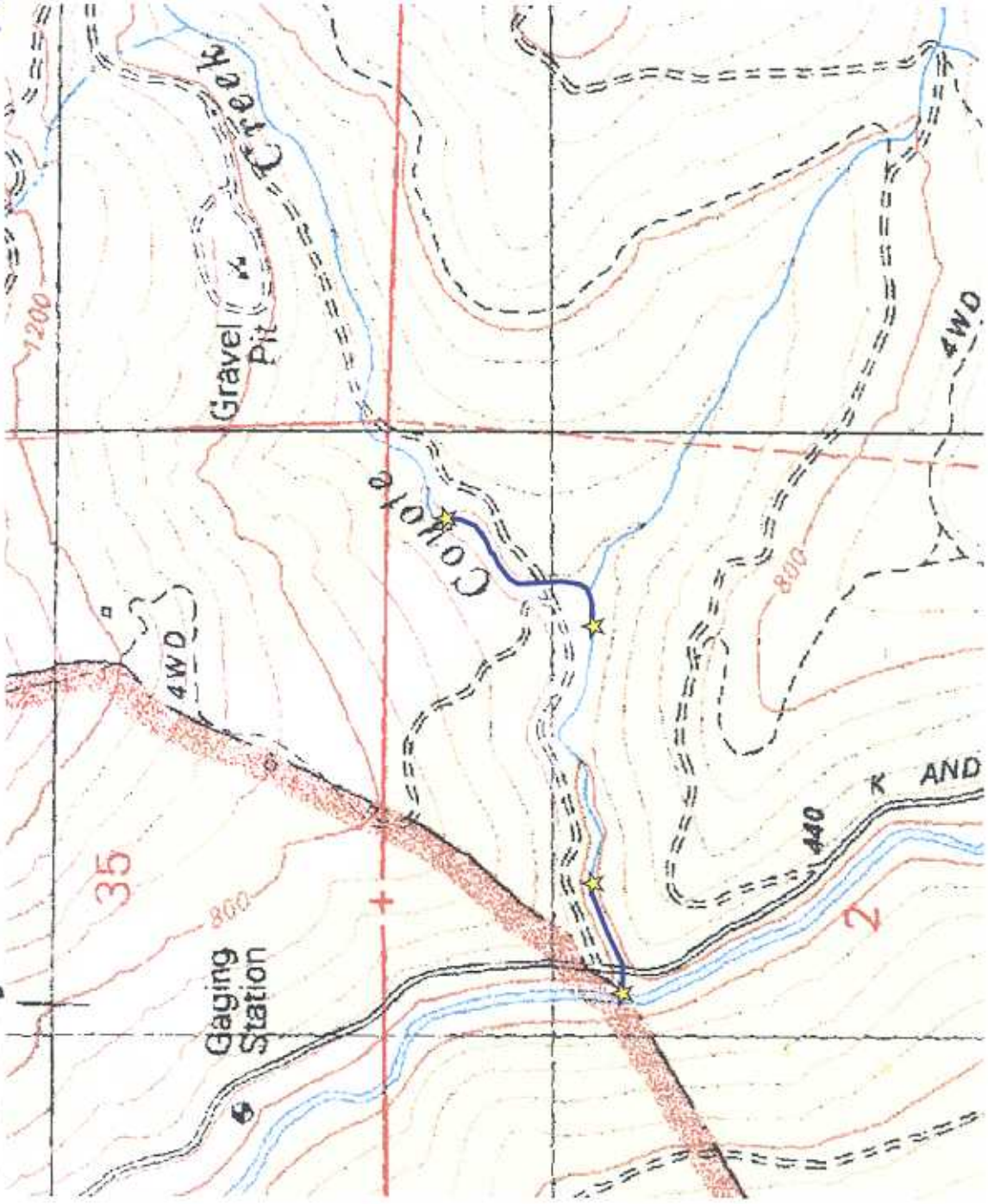
100 0 100 200 Meters



# 175 Coyote Creek

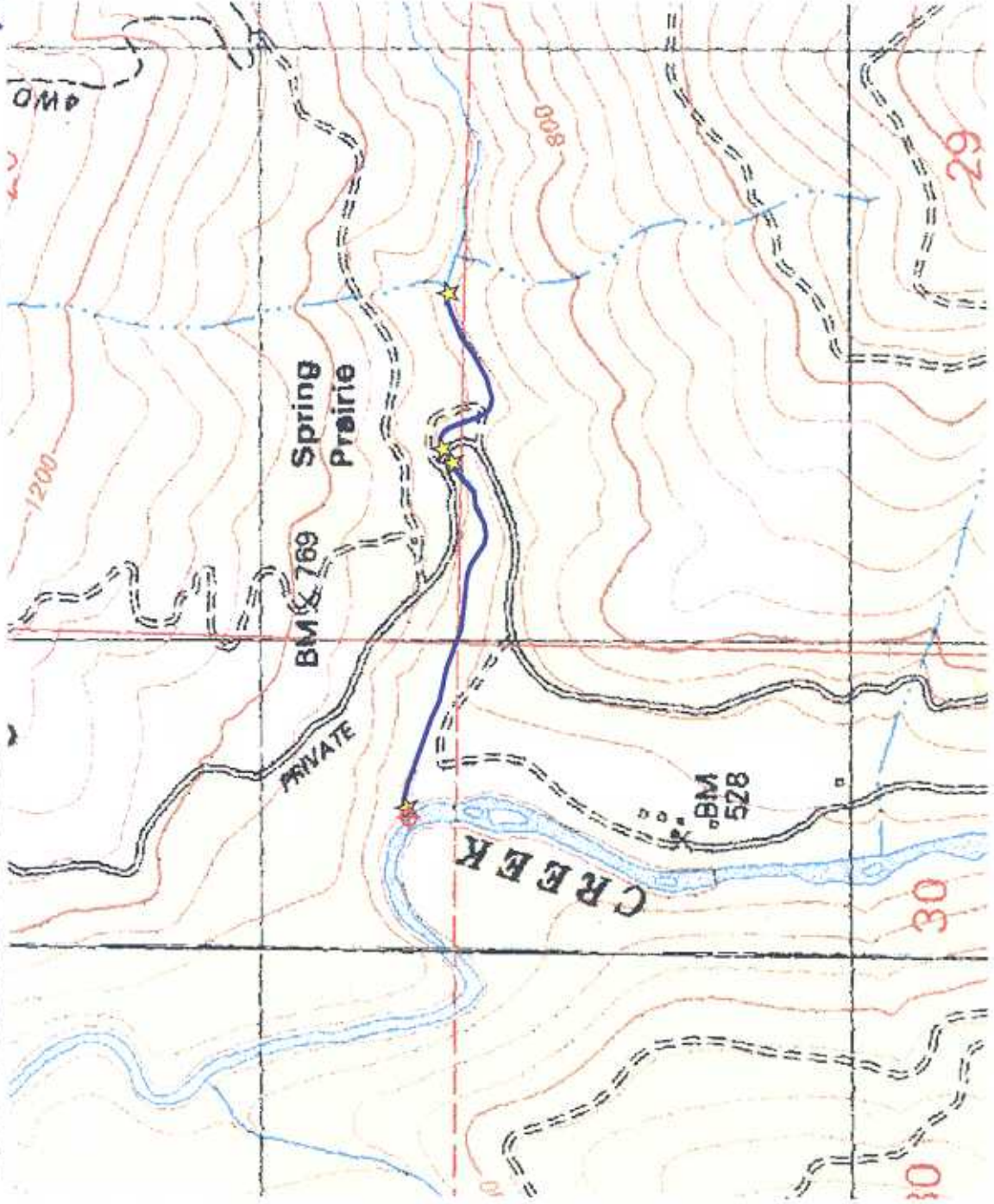
- GPS Point
- Reach Endpoints
- Surveyed Reaches

100 0 100 200 Meters



# 177 Lacks Creek

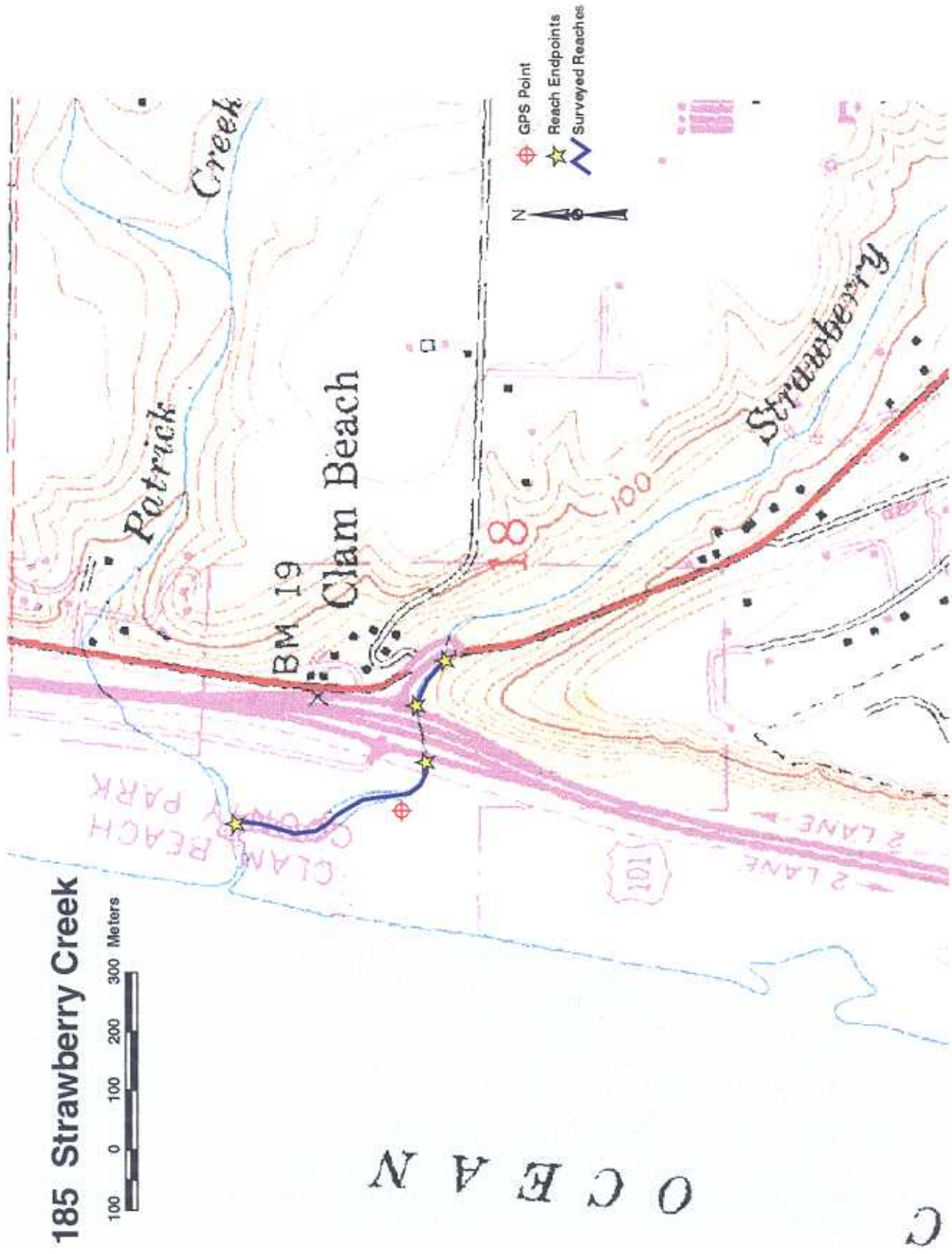
- GPS Point
- Reach Endpoints
- Surveyed Reaches



# 185 Strawberry Creek



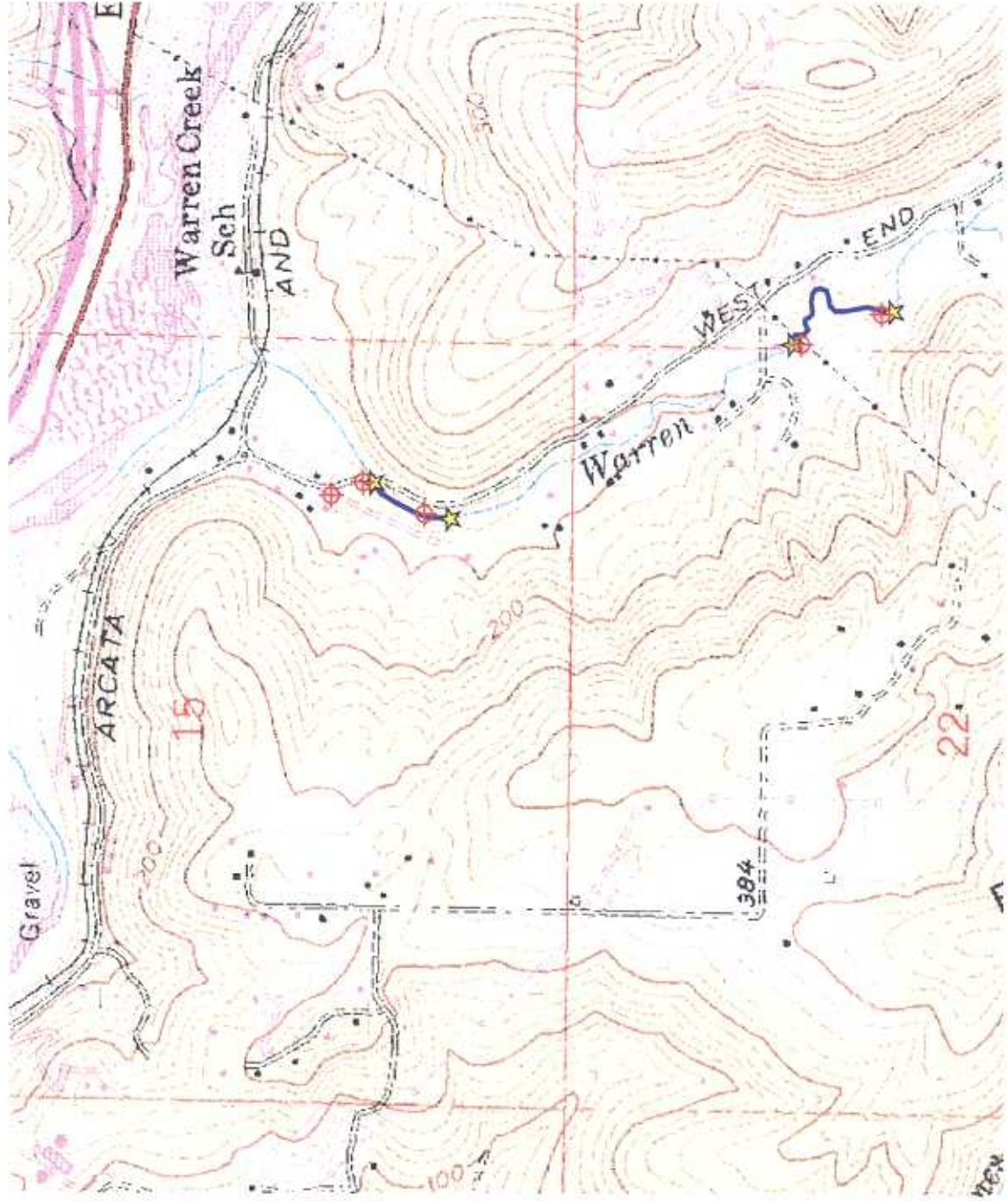
OCEAN



# 187 Warren Creek

- GPS Point
- Reach Endpoints
- Surveyed Reaches

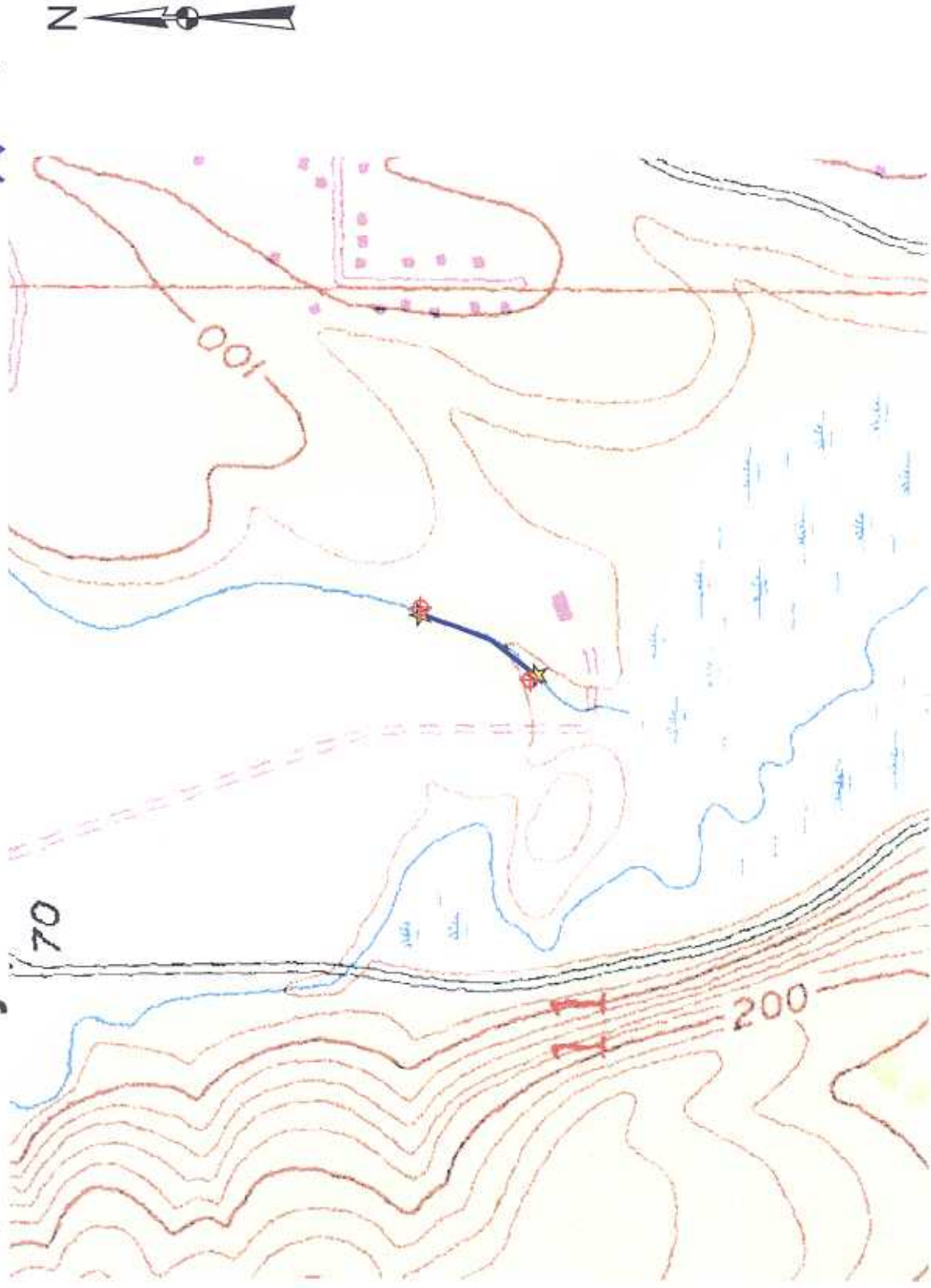
100 0 100 200 Meters



# 189 Grassy Creek

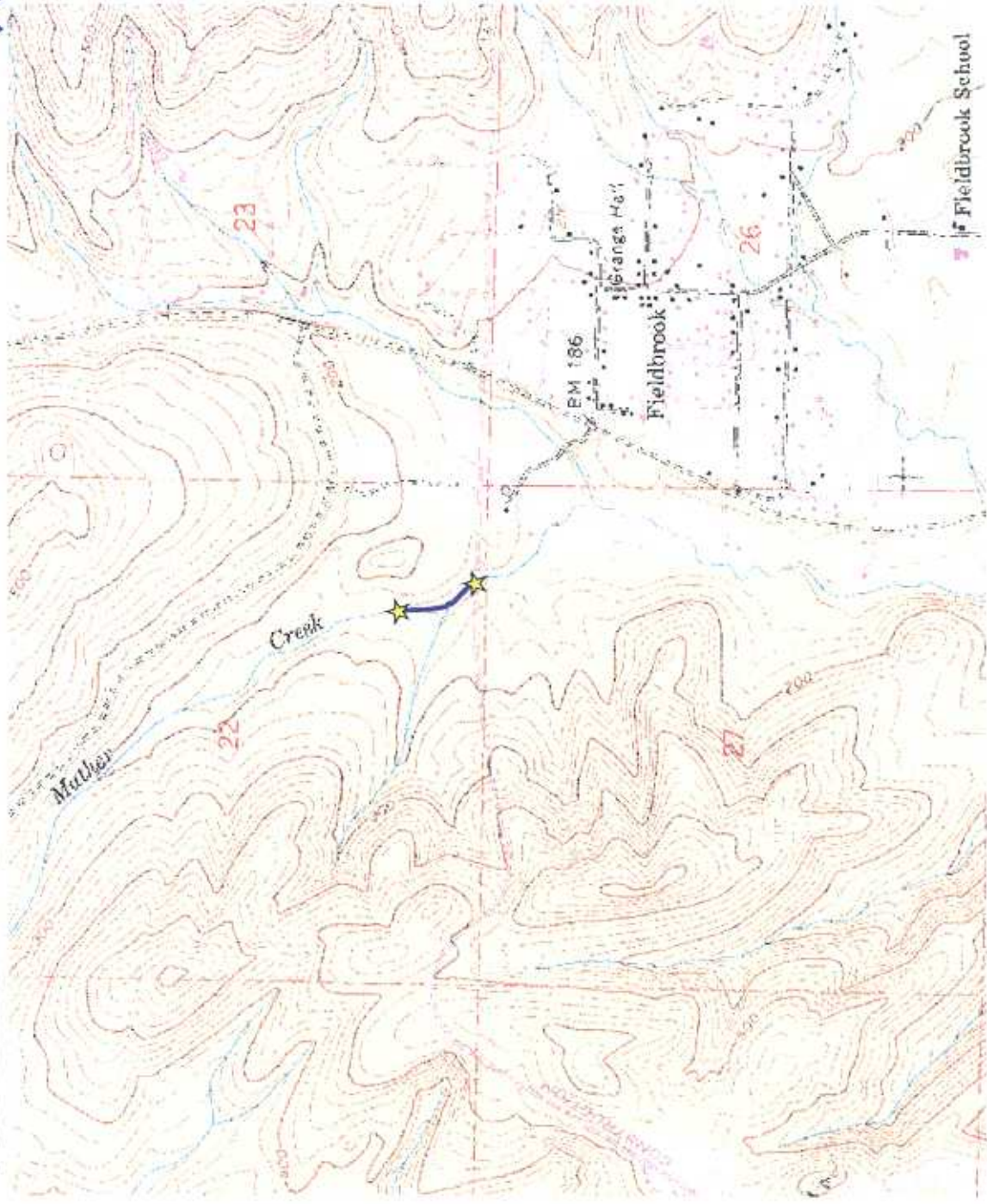
- GPS Point
- Reach Endpoints
- Surveyed Reaches

100 0 100 Meters



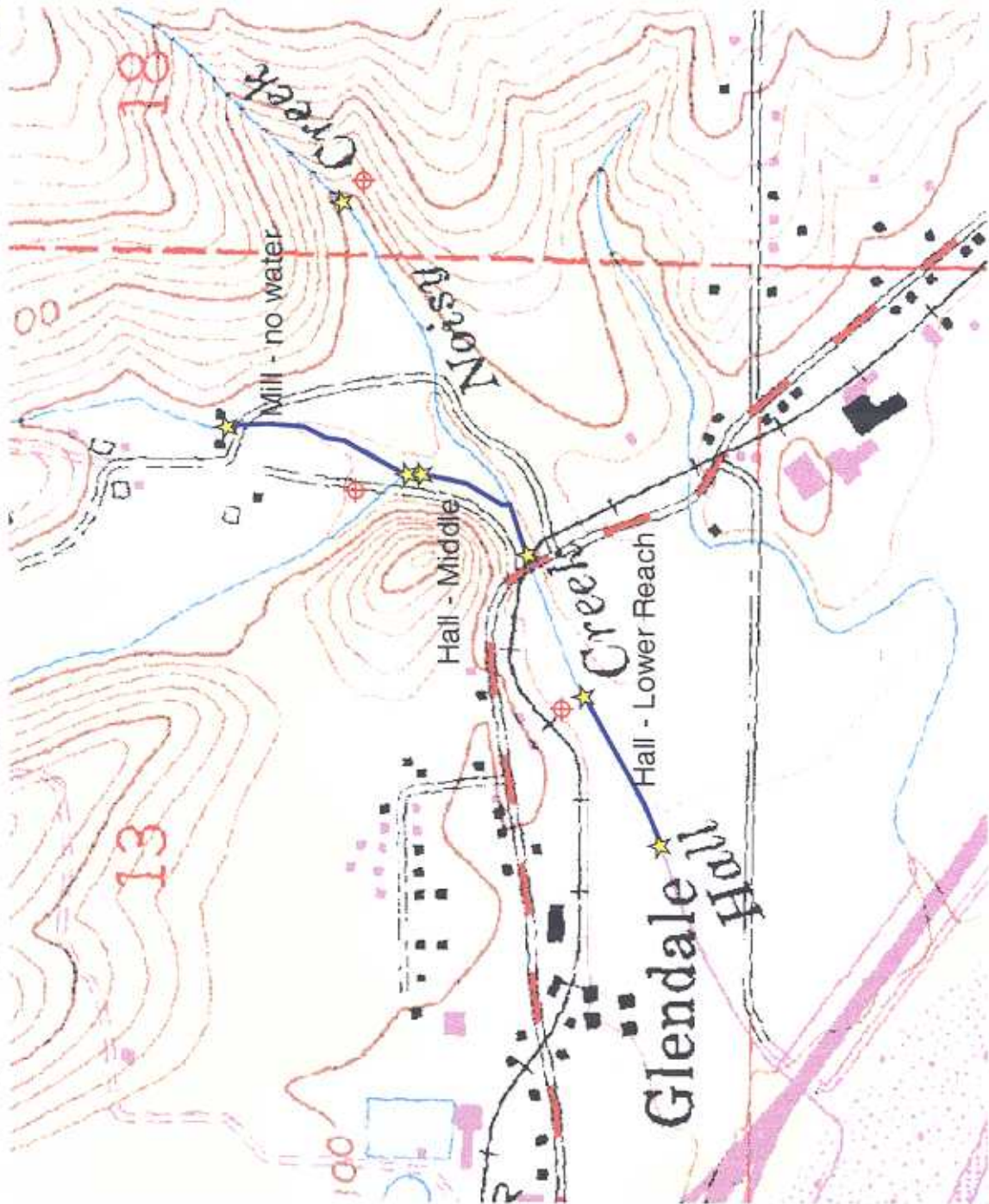
# 191 Mather Creek

- GPS Point
- Reach Endpoints
- Surveyed Reaches



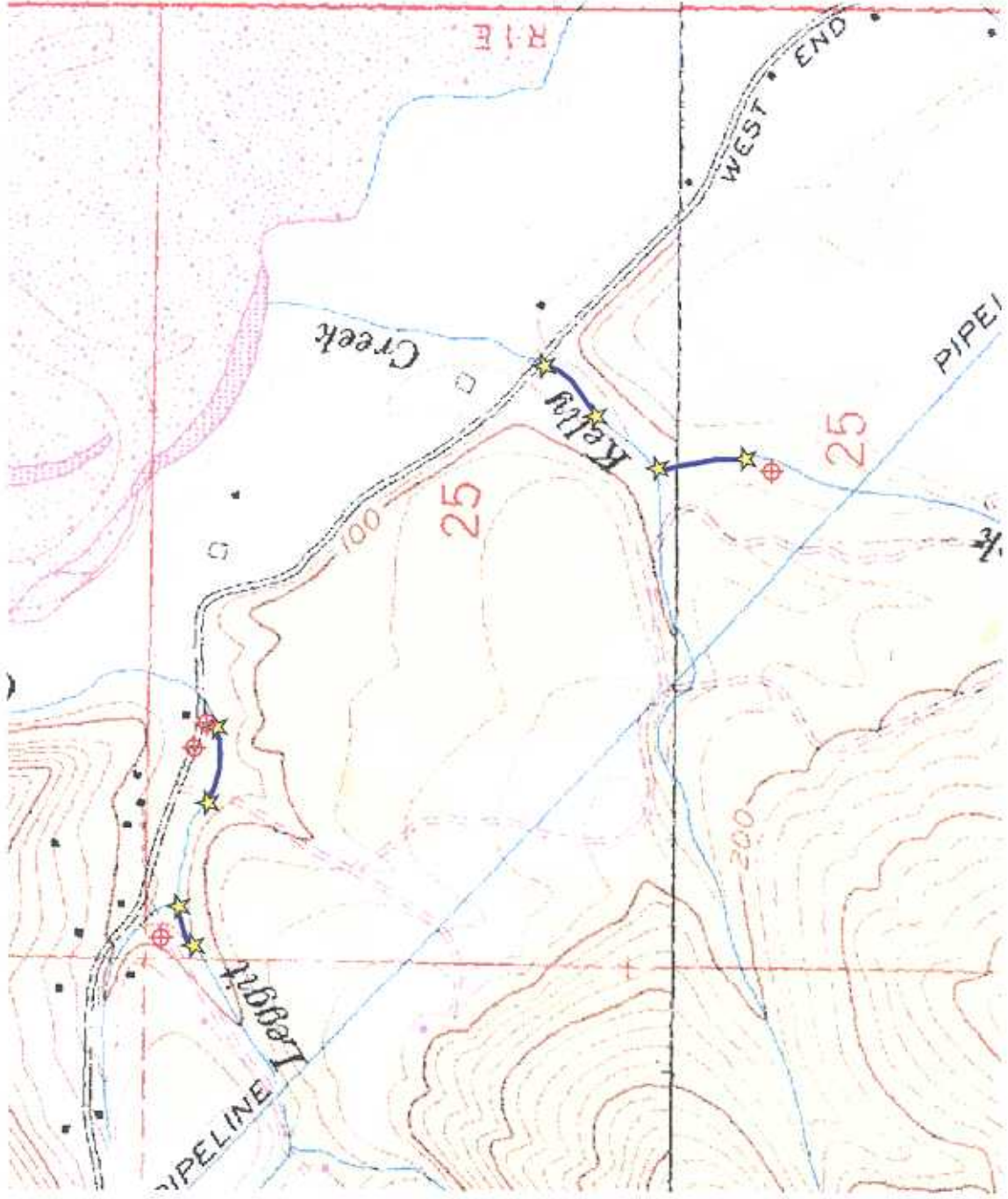
# Hall, Mill, & Noisy Creeks

- GPS Point
- Reach Endpoints
- Surveyed Reaches



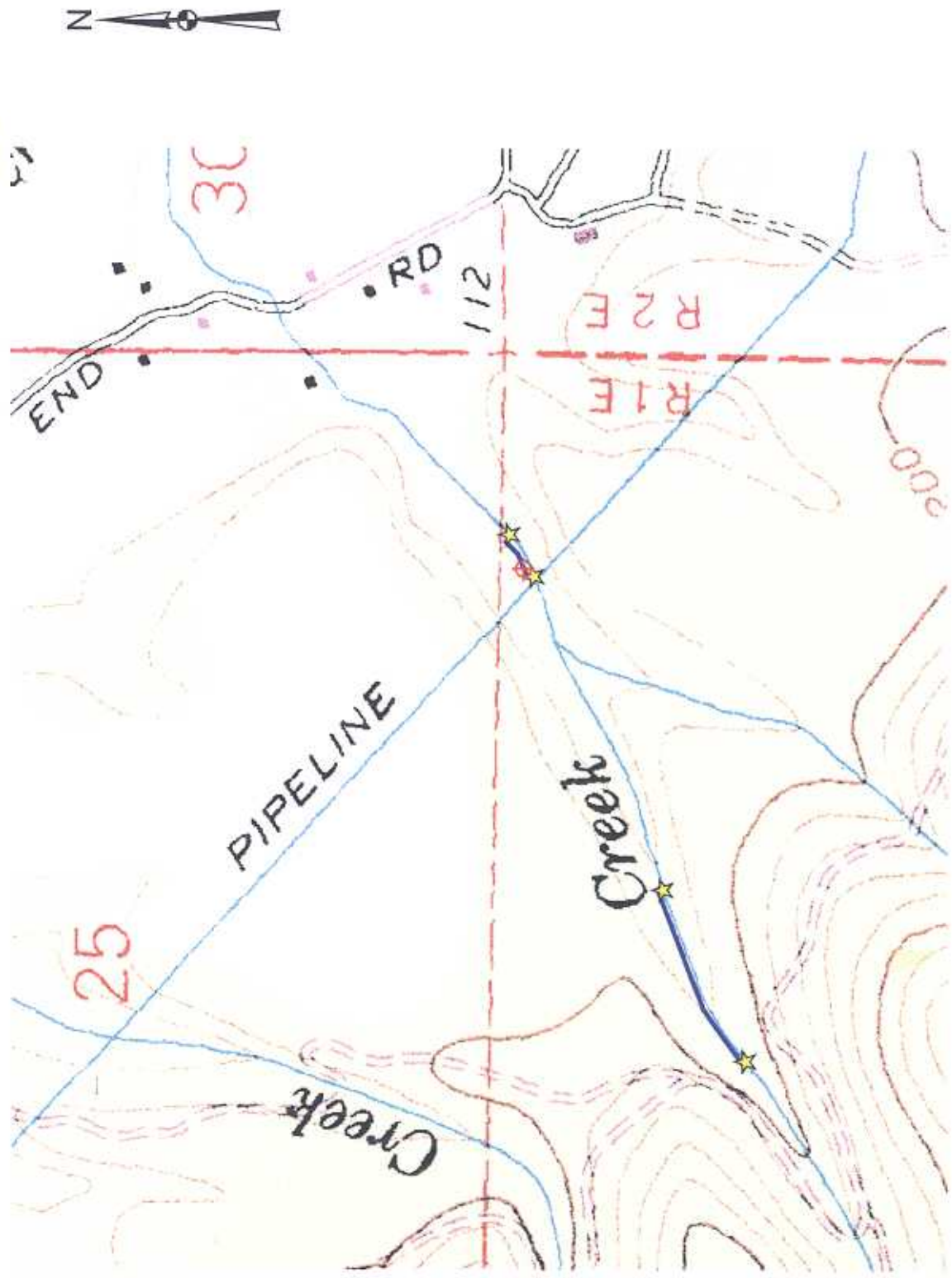
# 195 Leggit & 196 Kelly Creeks

- GPS Point
- Reach Endpoints
- Surveyed Reaches



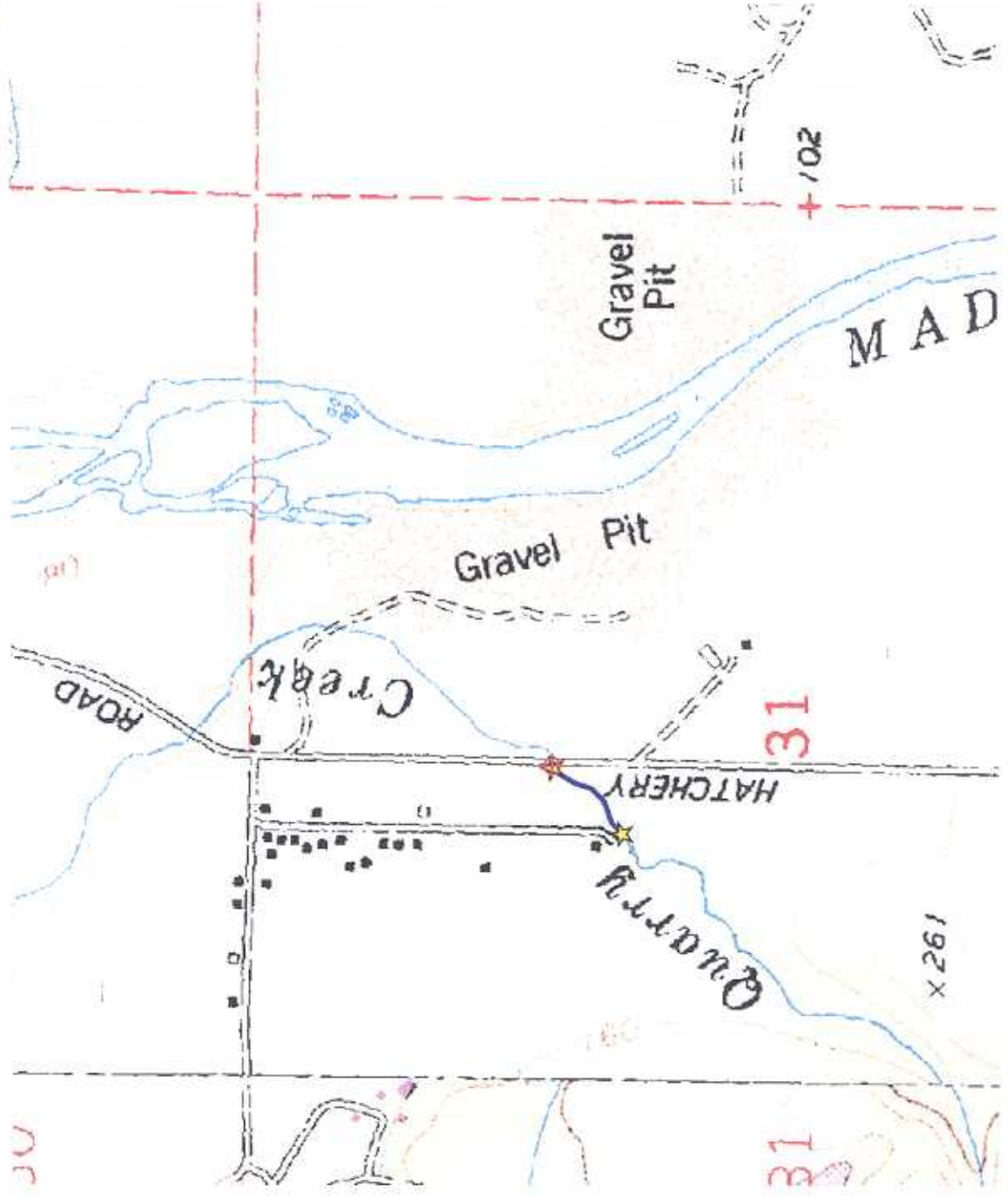


- GPS Point
- Reach Endpoints
- Surveyed Reaches



# 199 Quarry Creek

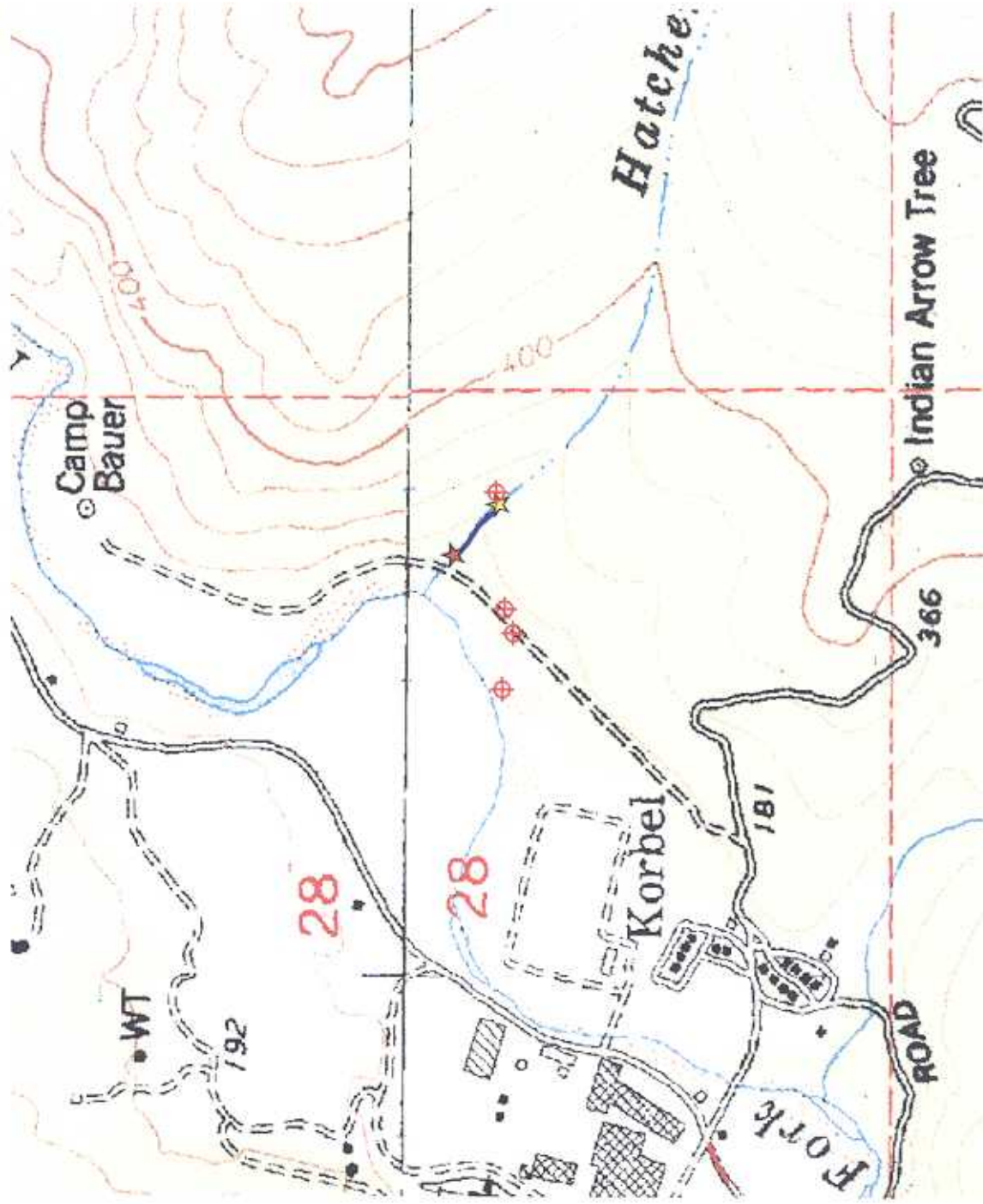
- GPS Point
- Reach Endpoints
- Surveyed Reaches



## 200 Camp Bauer (Hatchery) Creek

- GPS Point
- Reach Endpoints
- Surveyed Reaches

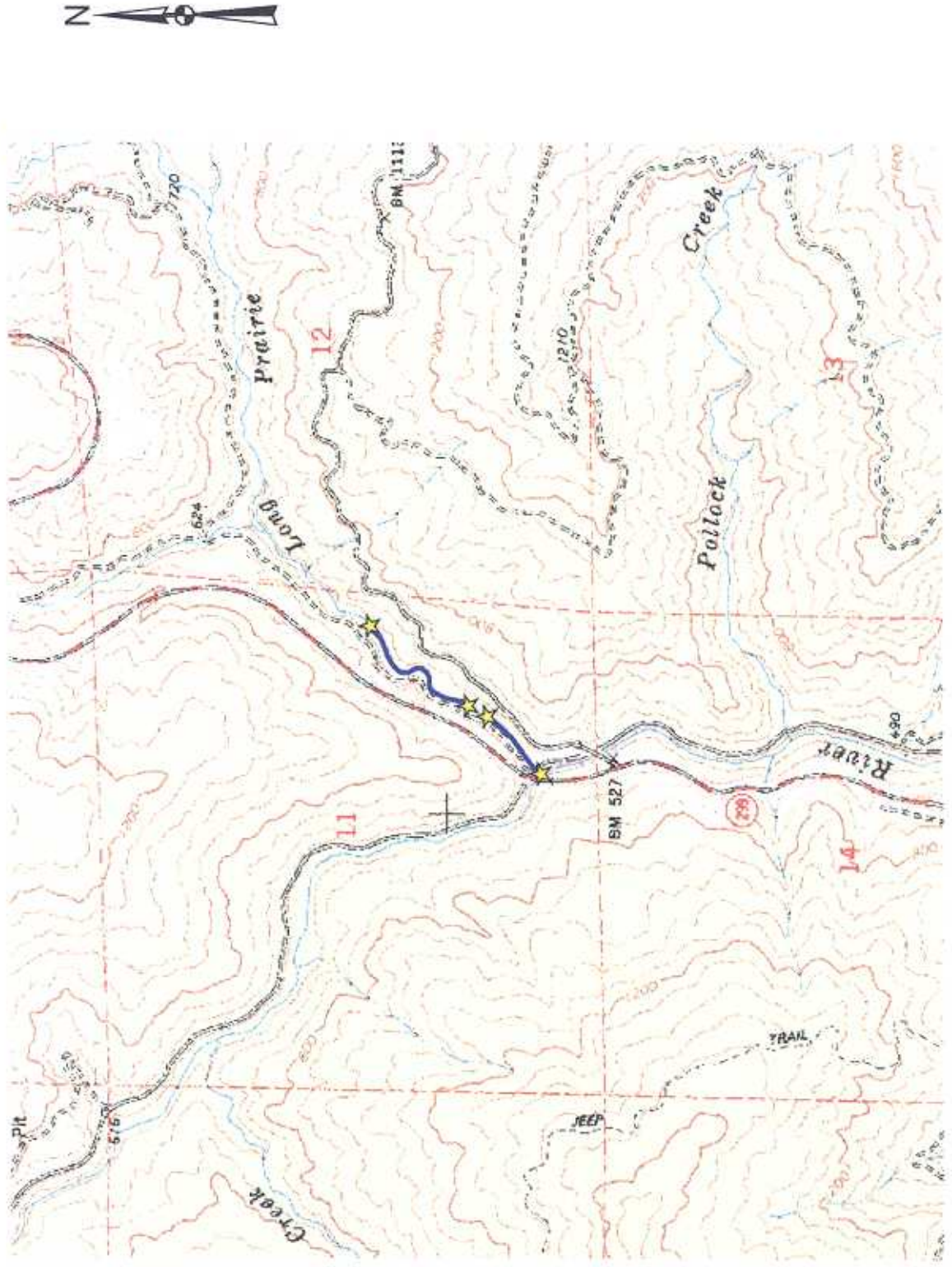
100 0 100 200 Meters



# 203 Long Prairie Creek

- GPS Point
- Reach Endpoints
- Surveyed Reaches

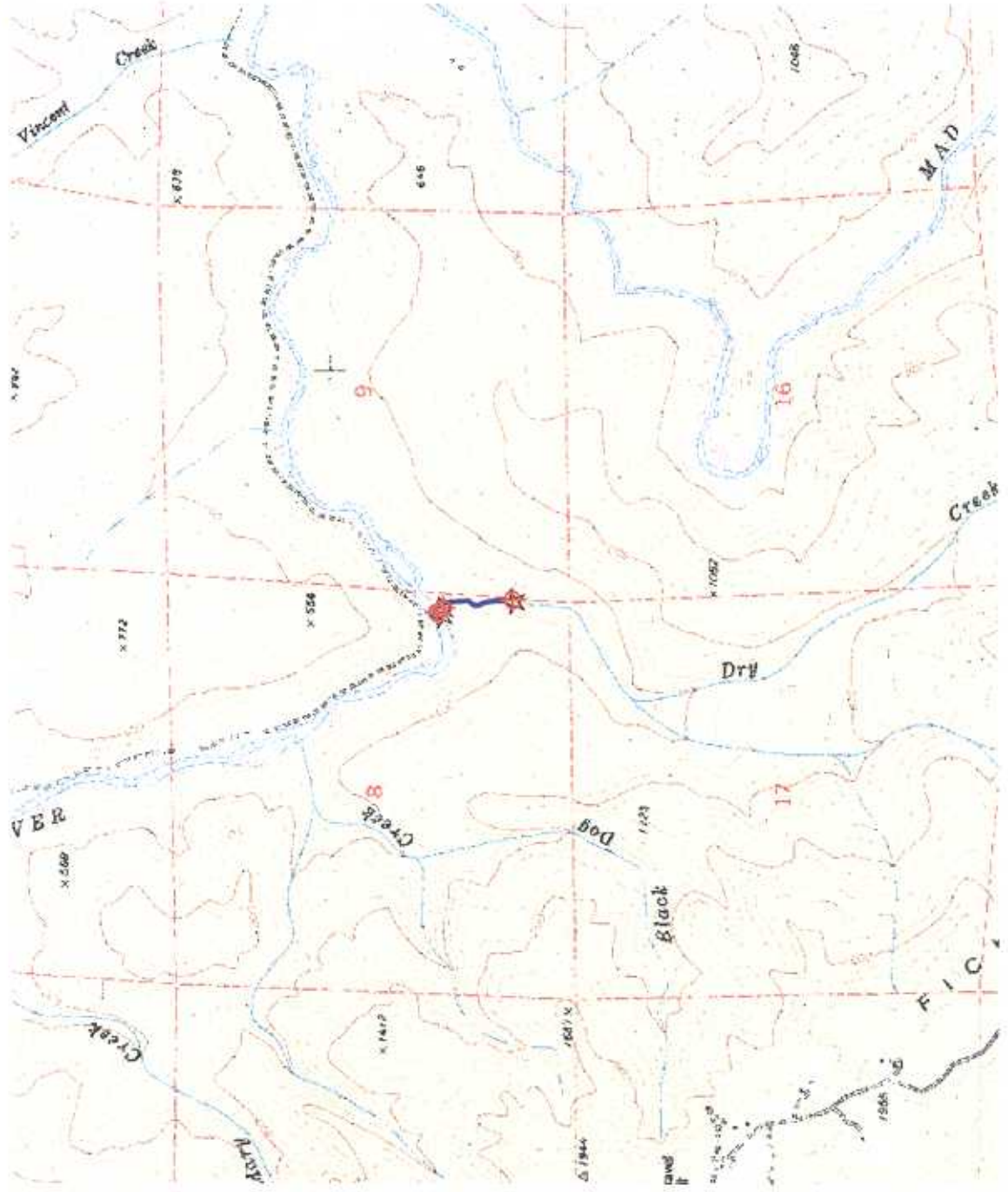
200 0 200 400 Meters



# 204 Dry Creek

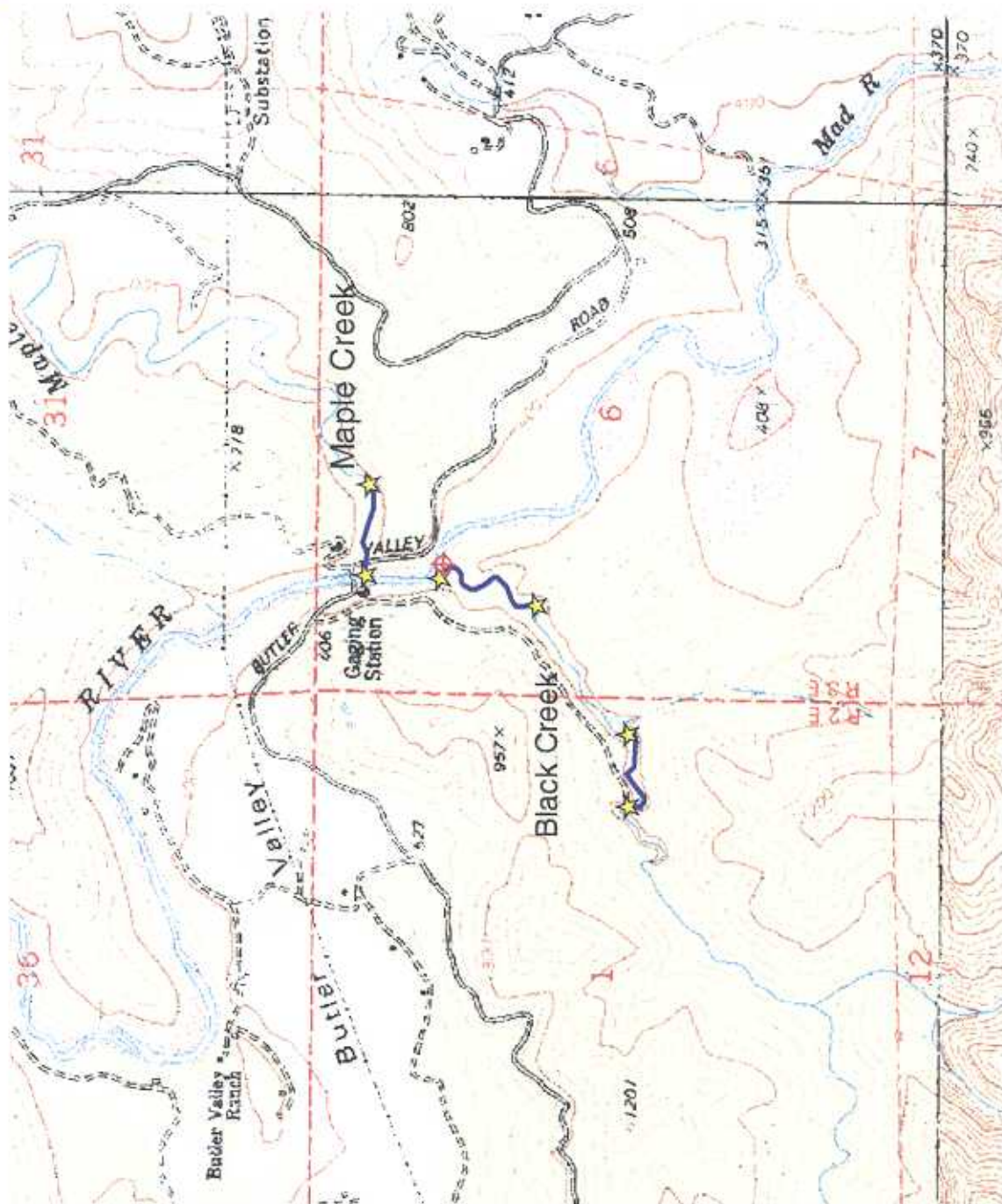
- GPS Point
- Reach Endpoints
- Surveyed Reaches

300 0 300 600 Meters



# 206 Maple & 207 Black Creek

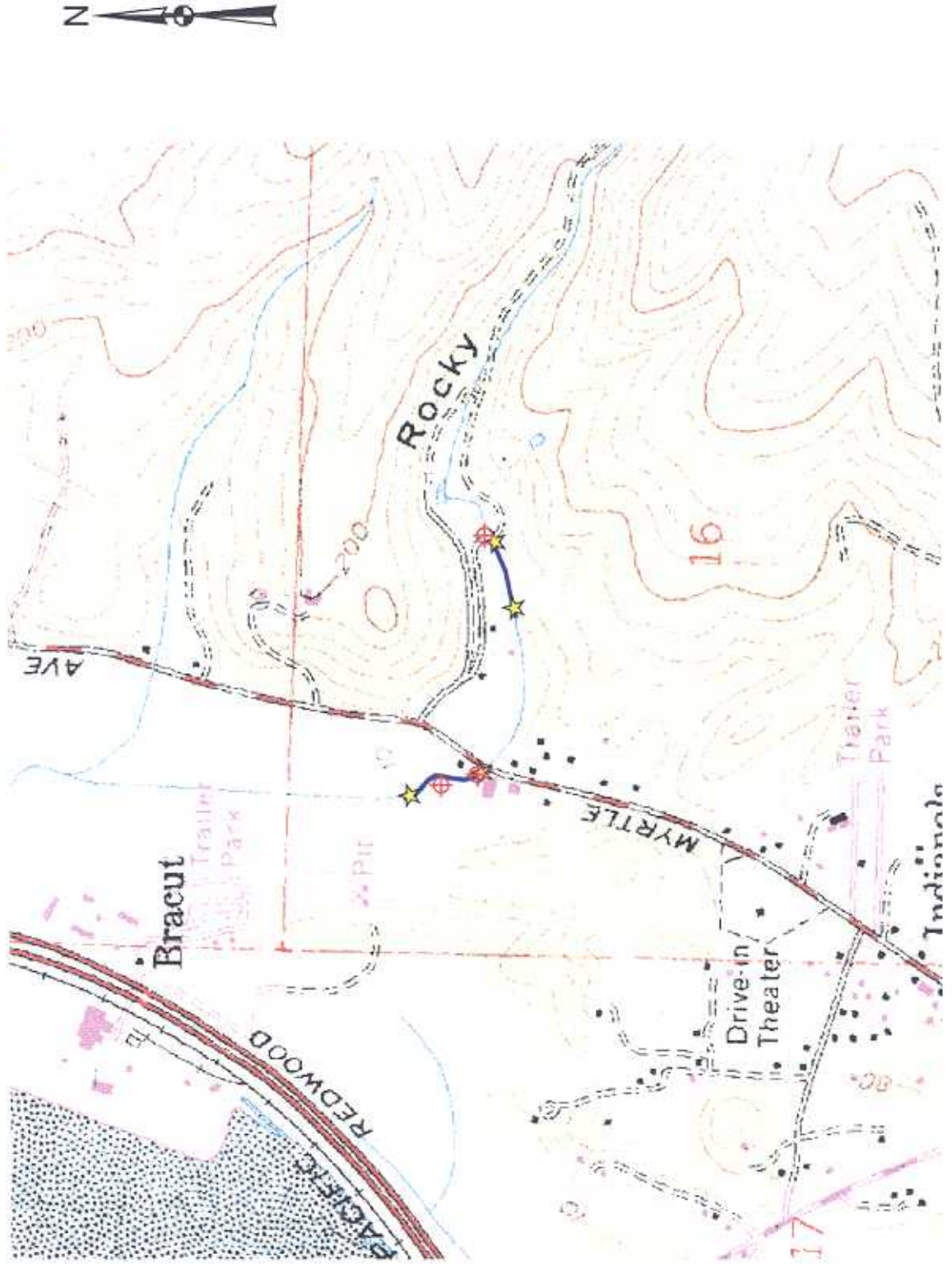
- GPS Point
- Reach Endpoints
- Surveyed Reaches



# 212 Rocky Gulch

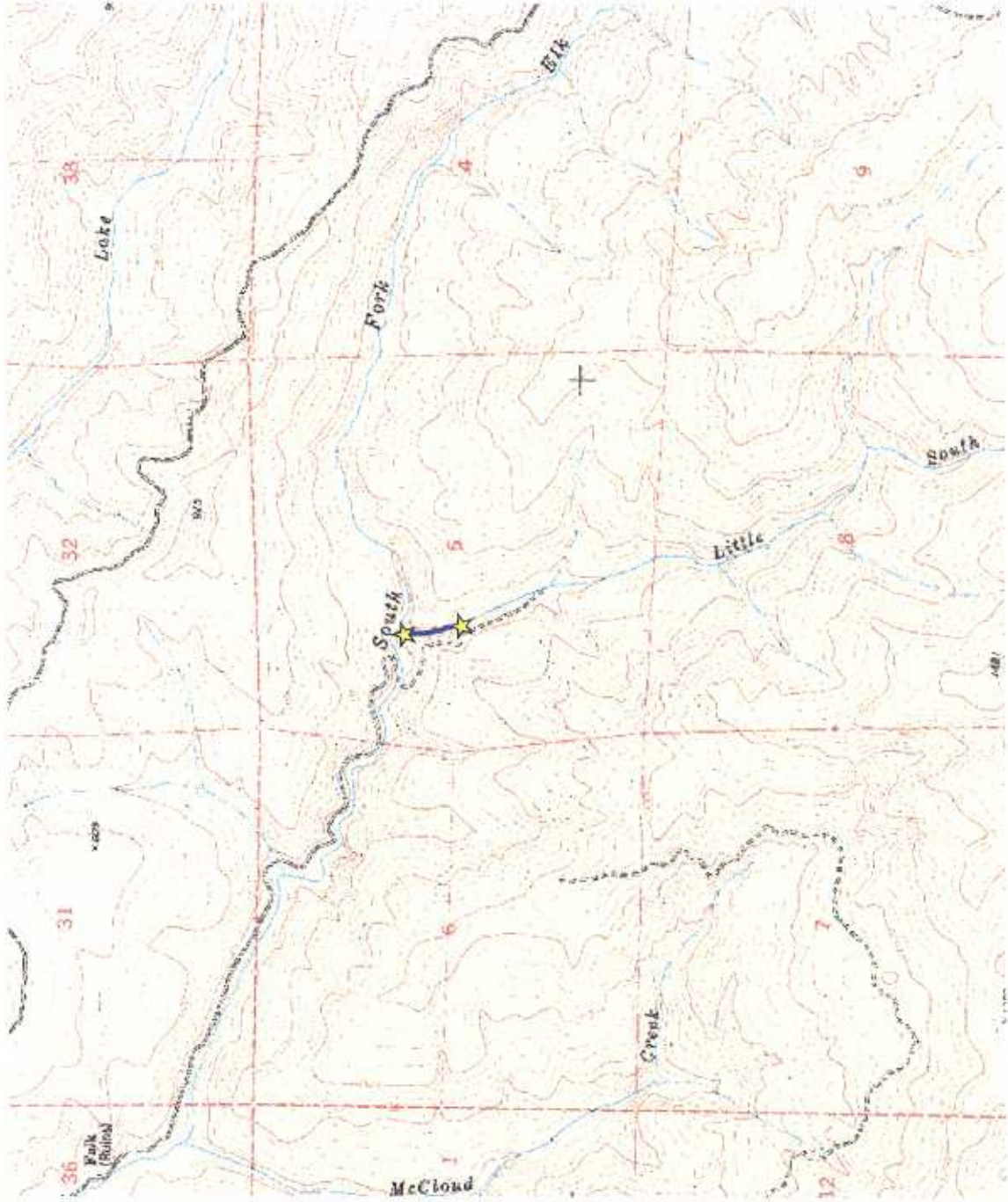
- GPS Point
- Reach Endpoints
- Surveyed Reaches

100 0 100 200 Meters



# 225 Little South Fork Elk River

- GPS Point
- Reach Endpoints
- Surveyed Reaches

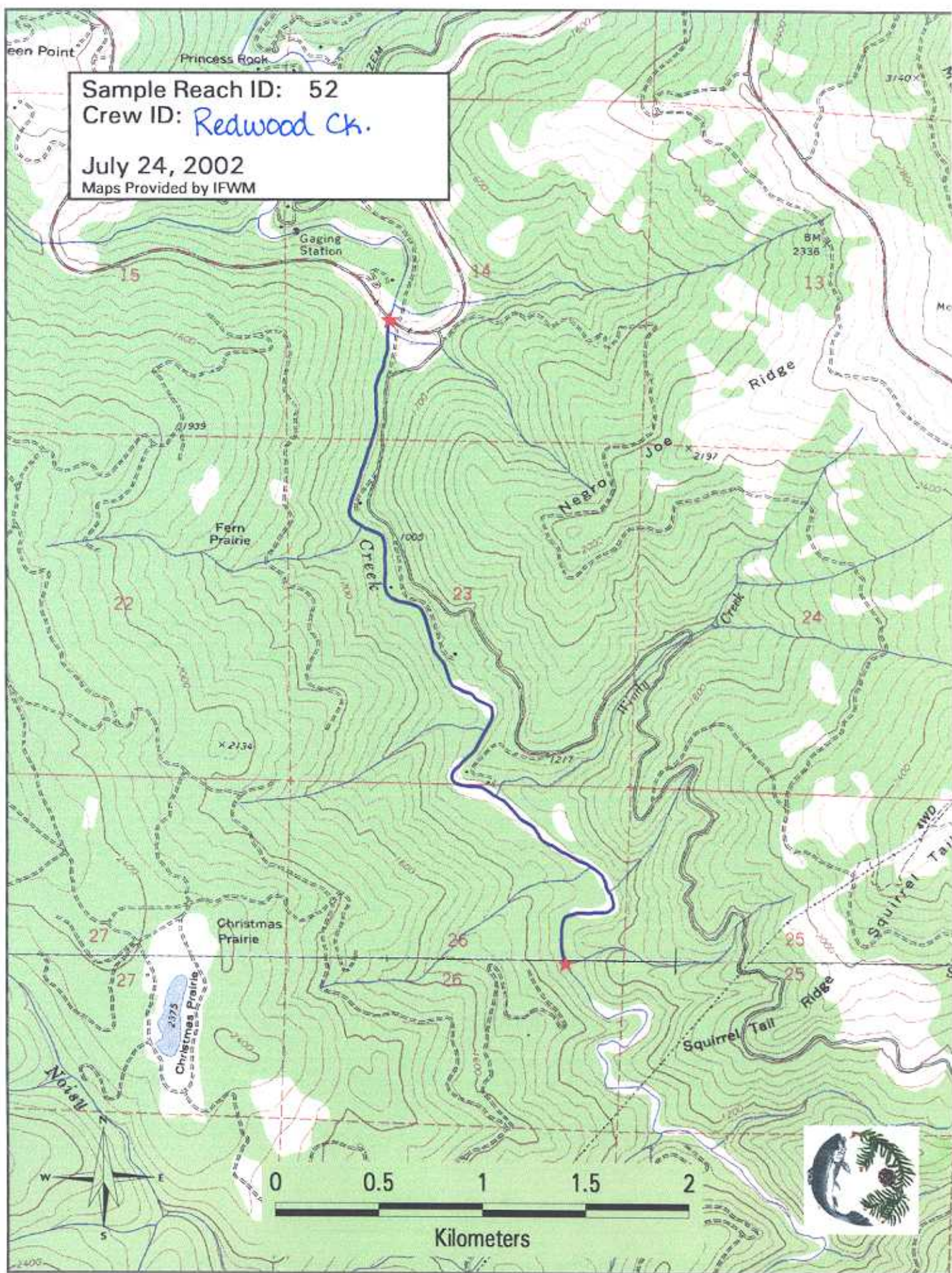


**2002**

**MAPS OF STREAM REACHES SURVEYED  
USING THE IFWM STREAM REACH SAMPLING PROTOCOL**

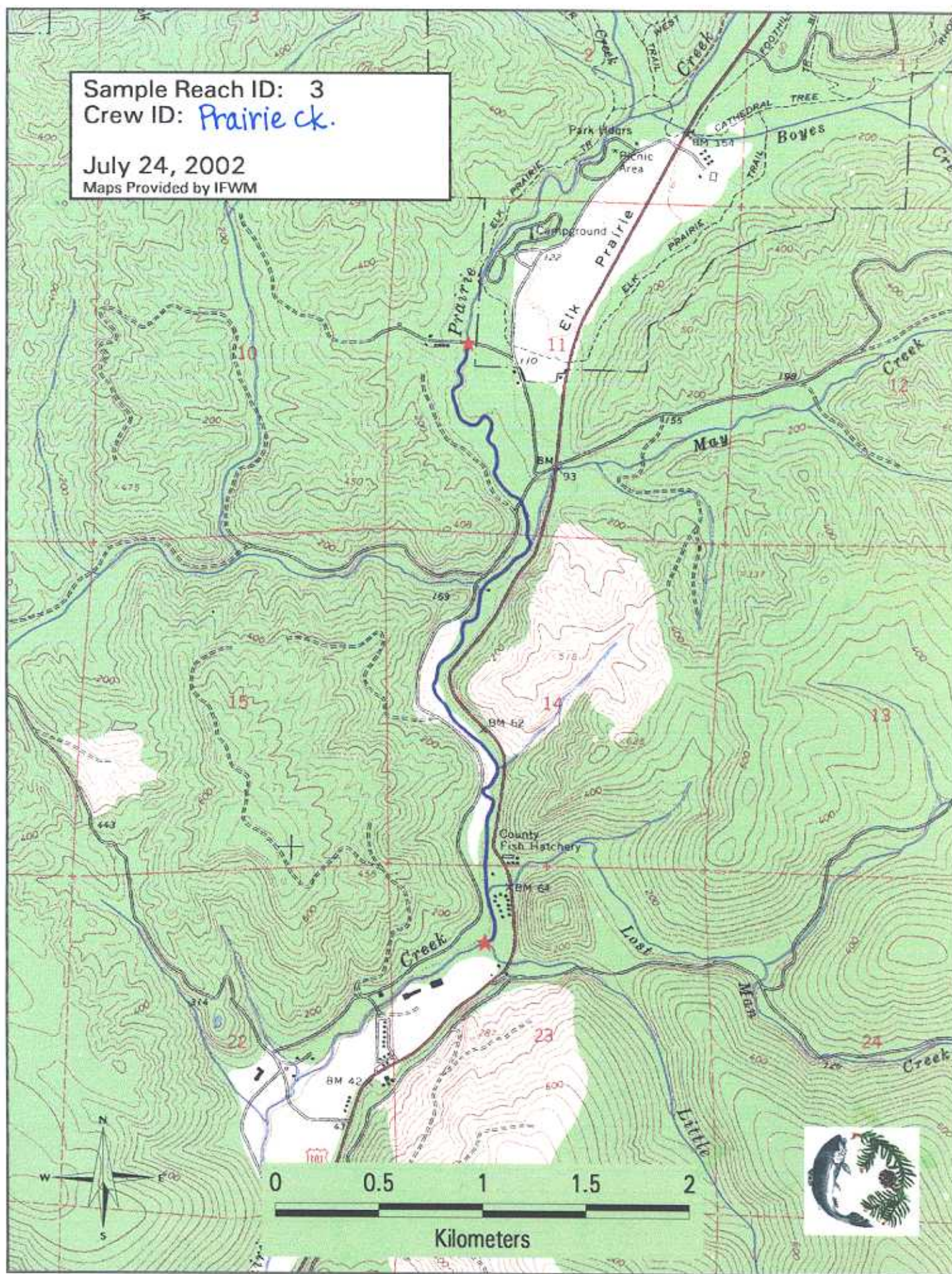
Sample Reach ID: 52  
Crew ID: Redwood Ch.

July 24, 2002  
Maps Provided by IFWM



Sample Reach ID: 3  
Crew ID: *Prairie ck.*

July 24, 2002  
Maps Provided by IFWM

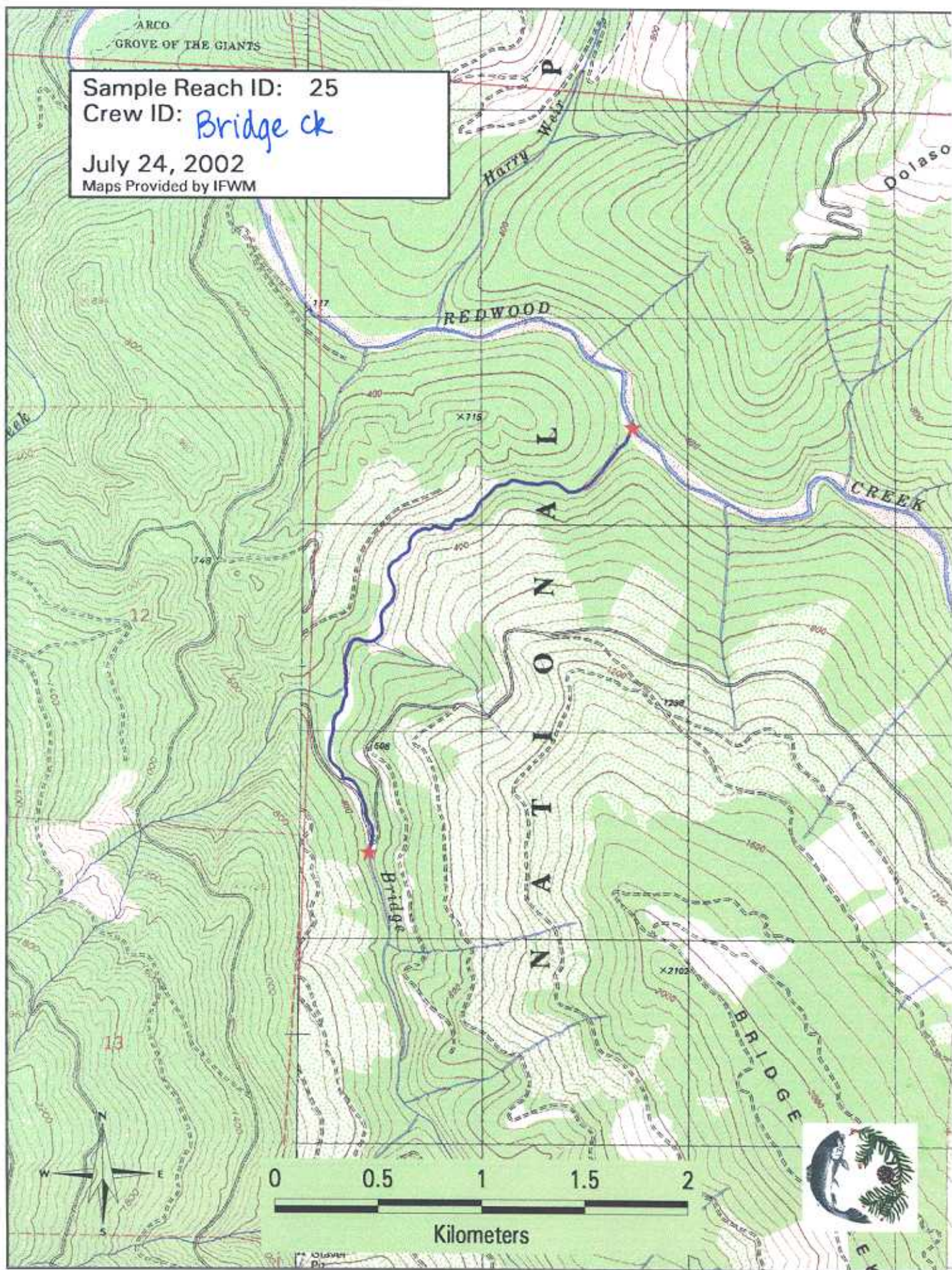


Sample Reach ID: 25

Crew ID: Bridge ck

July 24, 2002

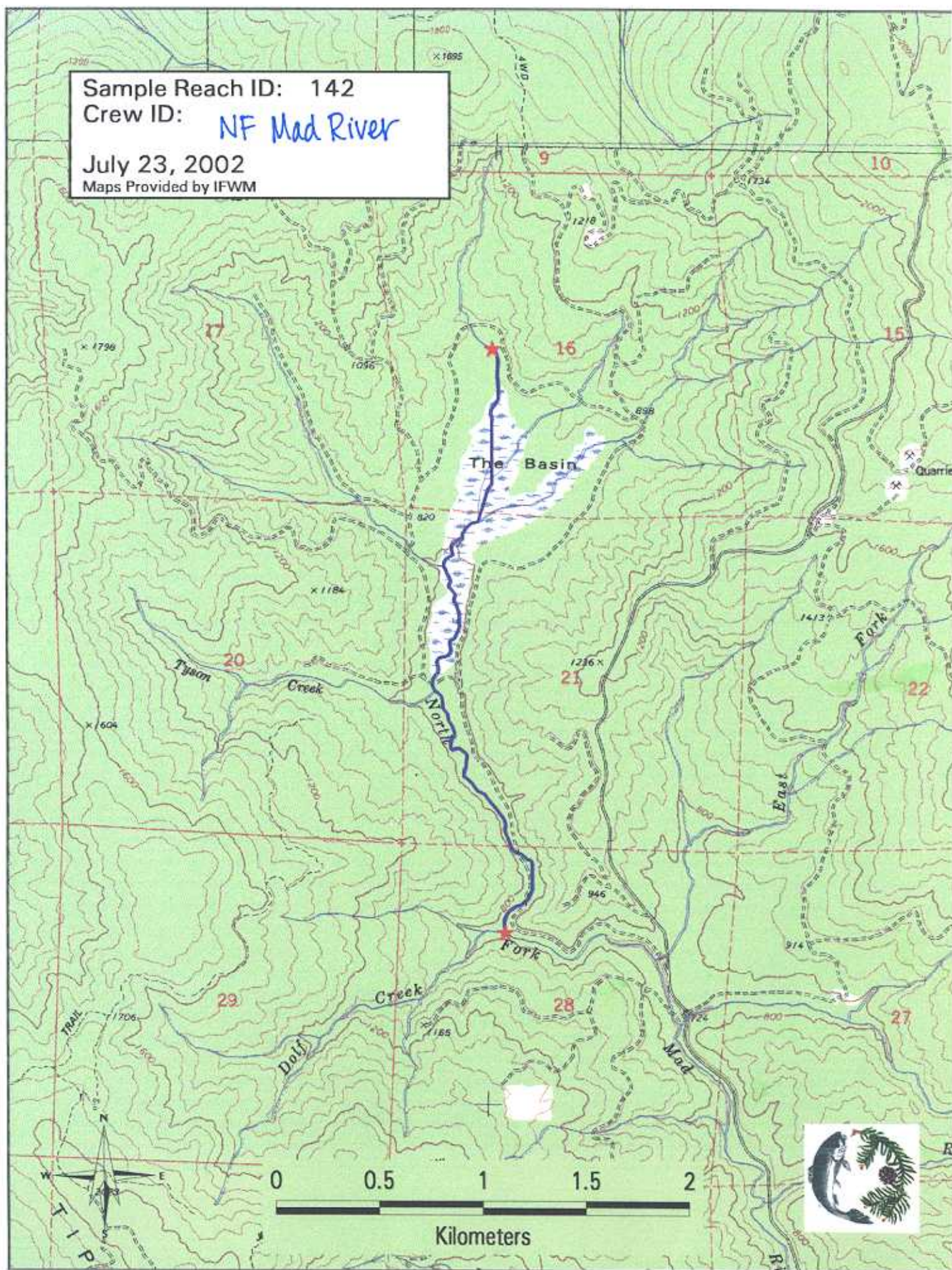
Maps Provided by IFWM





Sample Reach ID: 142  
Crew ID: *NF Mad River*

July 23, 2002  
Maps Provided by IFWM

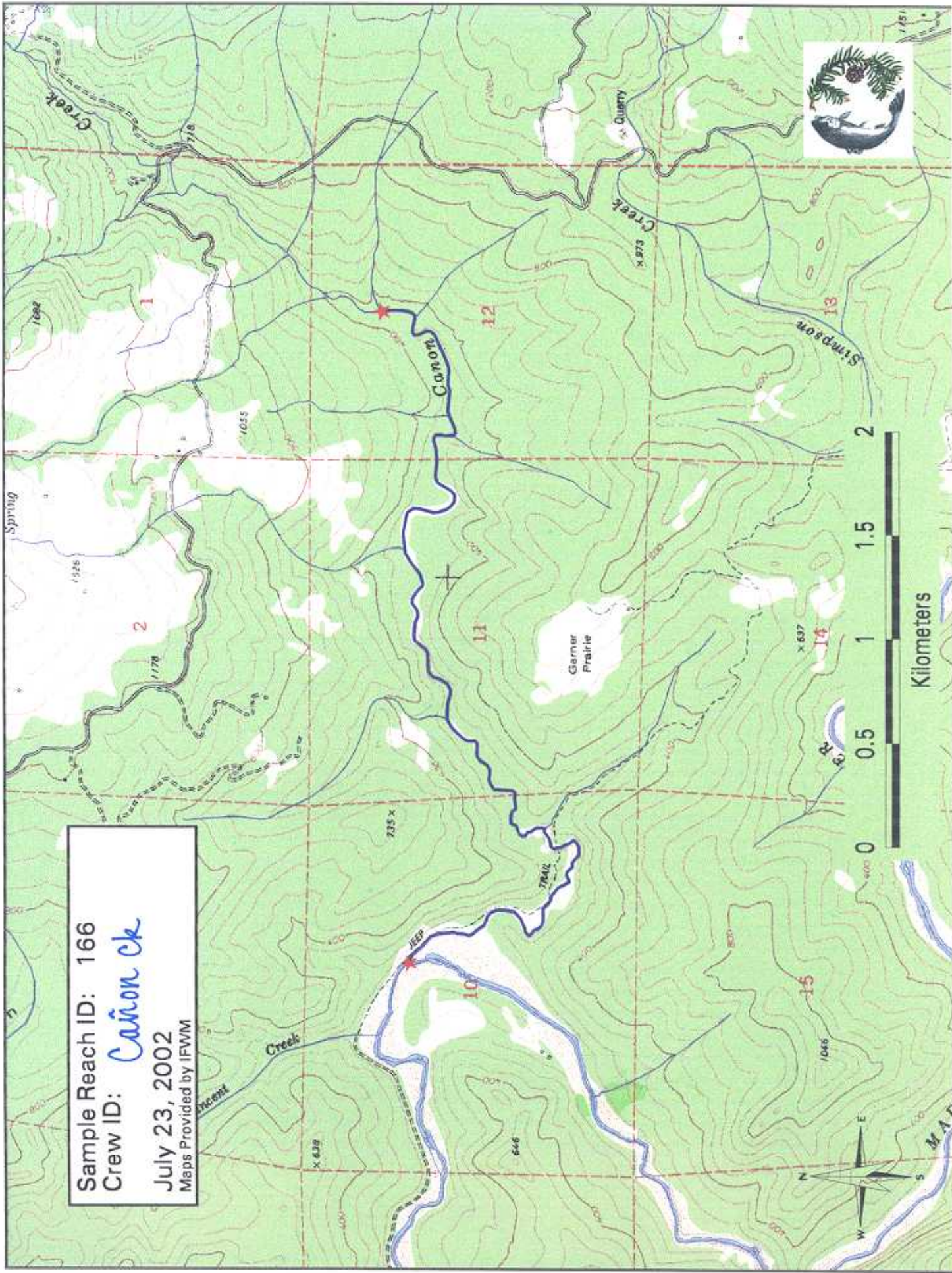


Sample Reach ID: 166

Crew ID: *Cañon ck*

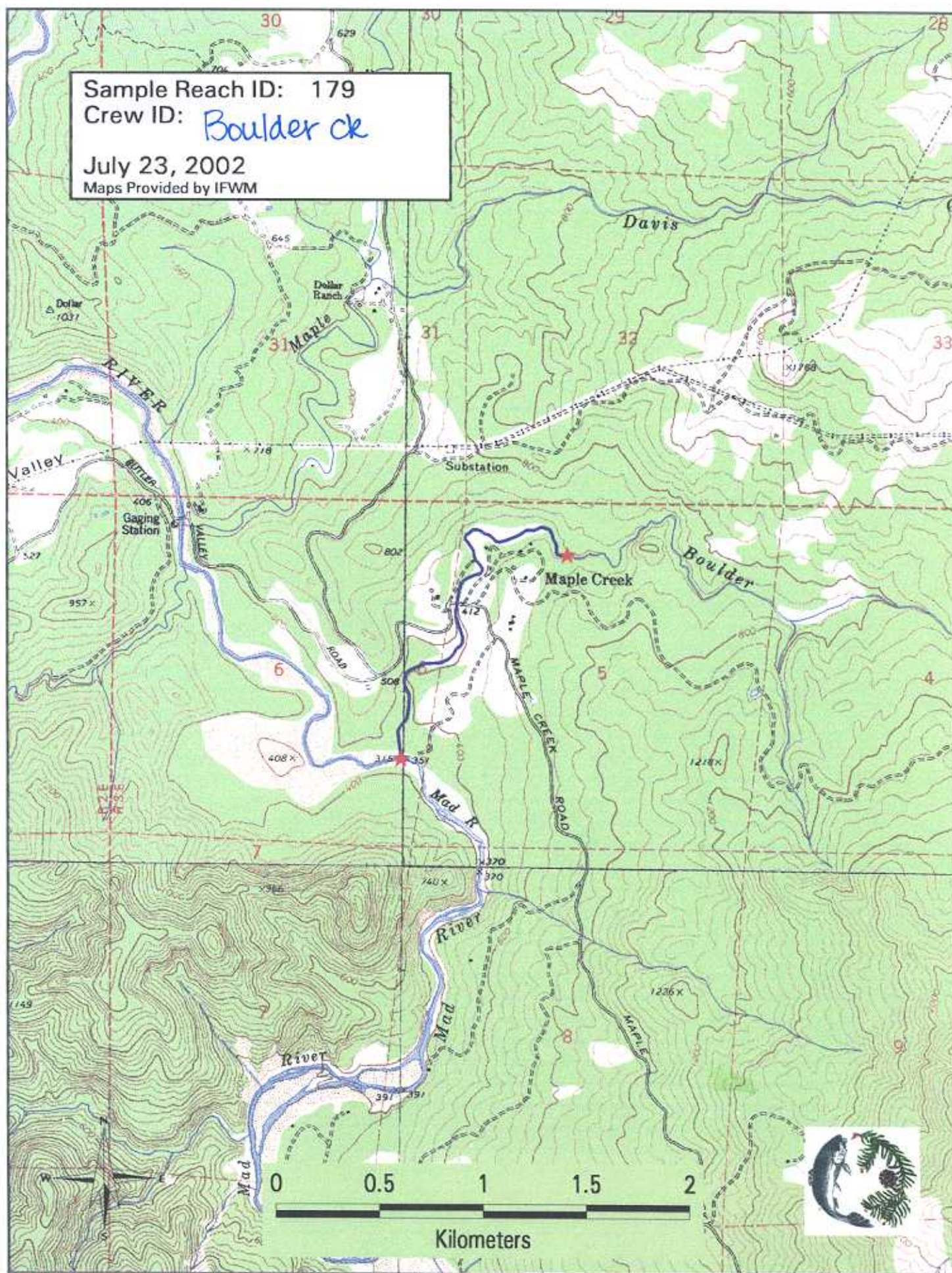
July 23, 2002

Maps Provided by IFWM

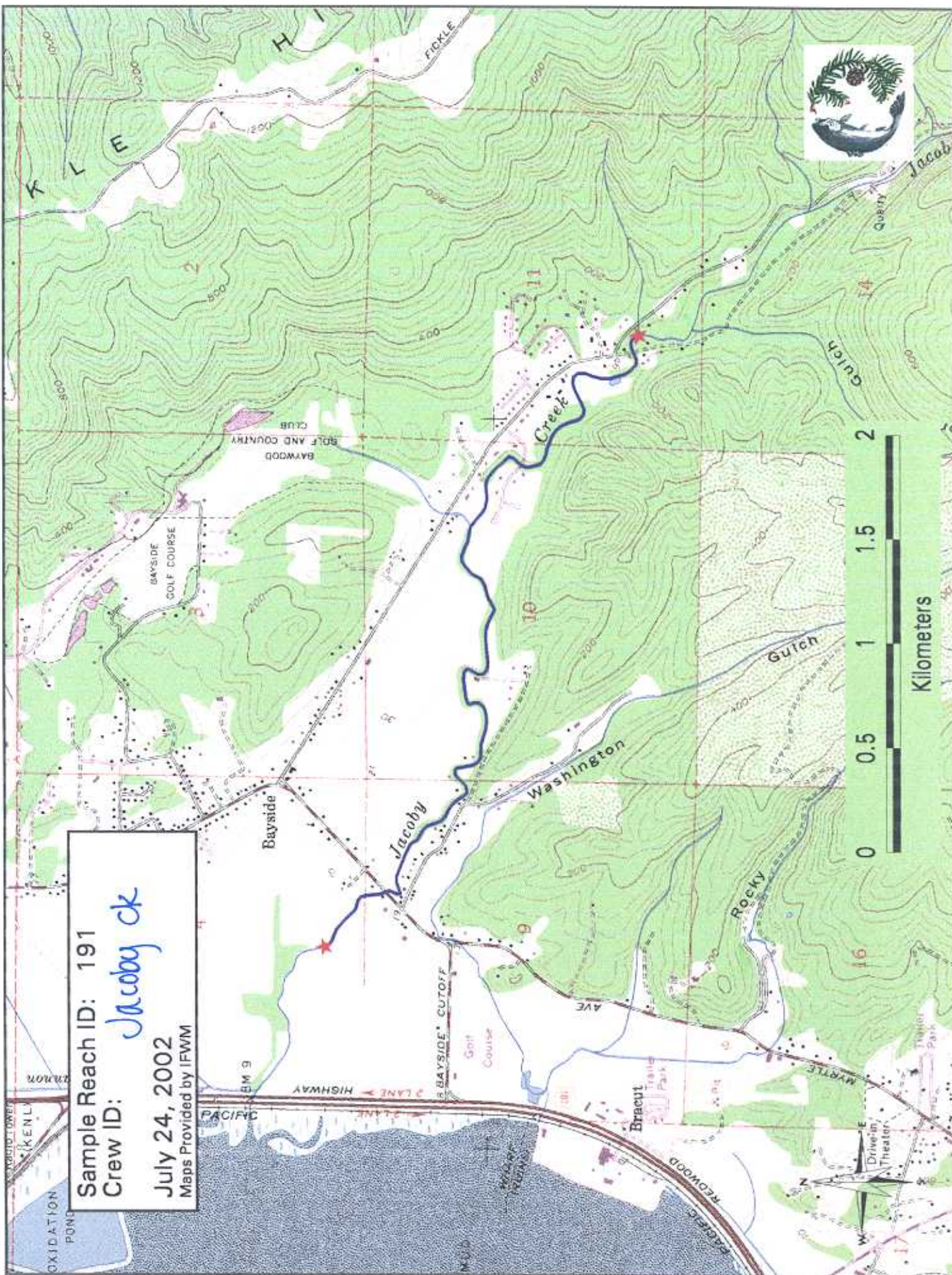


Sample Reach ID: 179  
Crew ID: *Boulder ck*

July 23, 2002  
Maps Provided by IFWM



Sample Reach ID: 191  
Crew ID: *Jacoby ck*  
July 24, 2002  
Maps Provided by IFWM



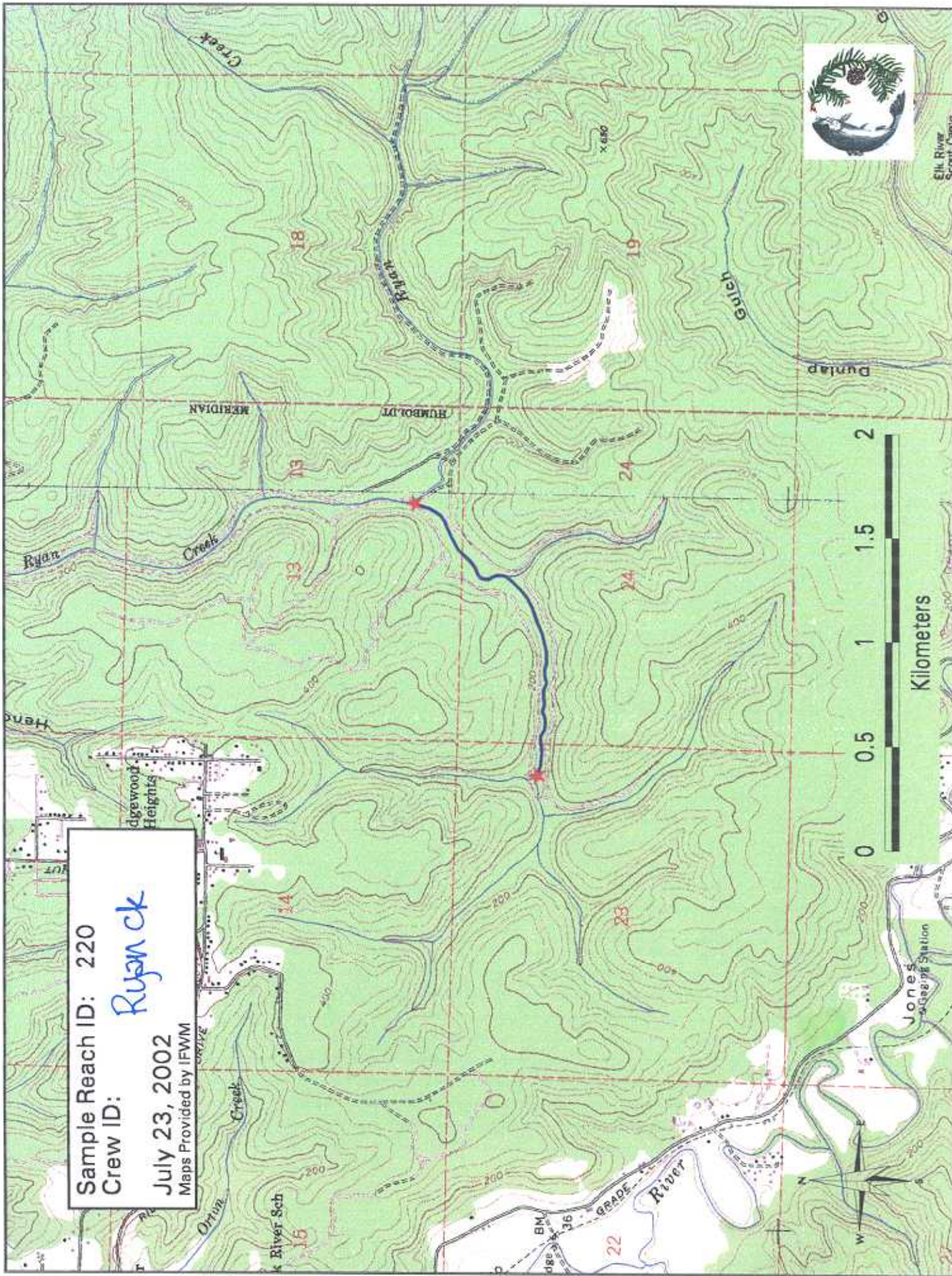
Sample Reach ID: 220

Crew ID:

Ryanck

July 23, 2002

Maps Provided by IFWM



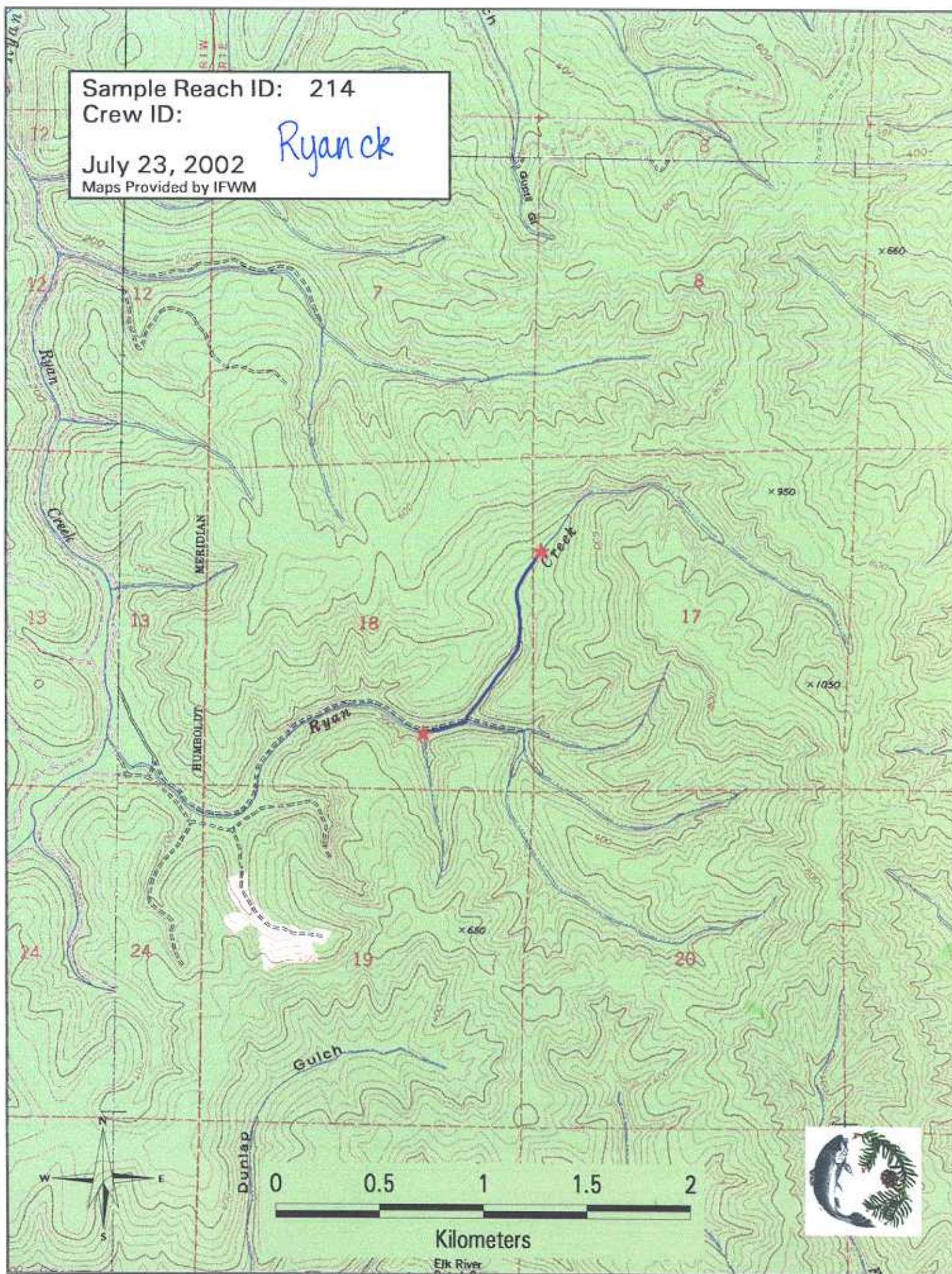
Sample Reach ID: 214

Crew ID:

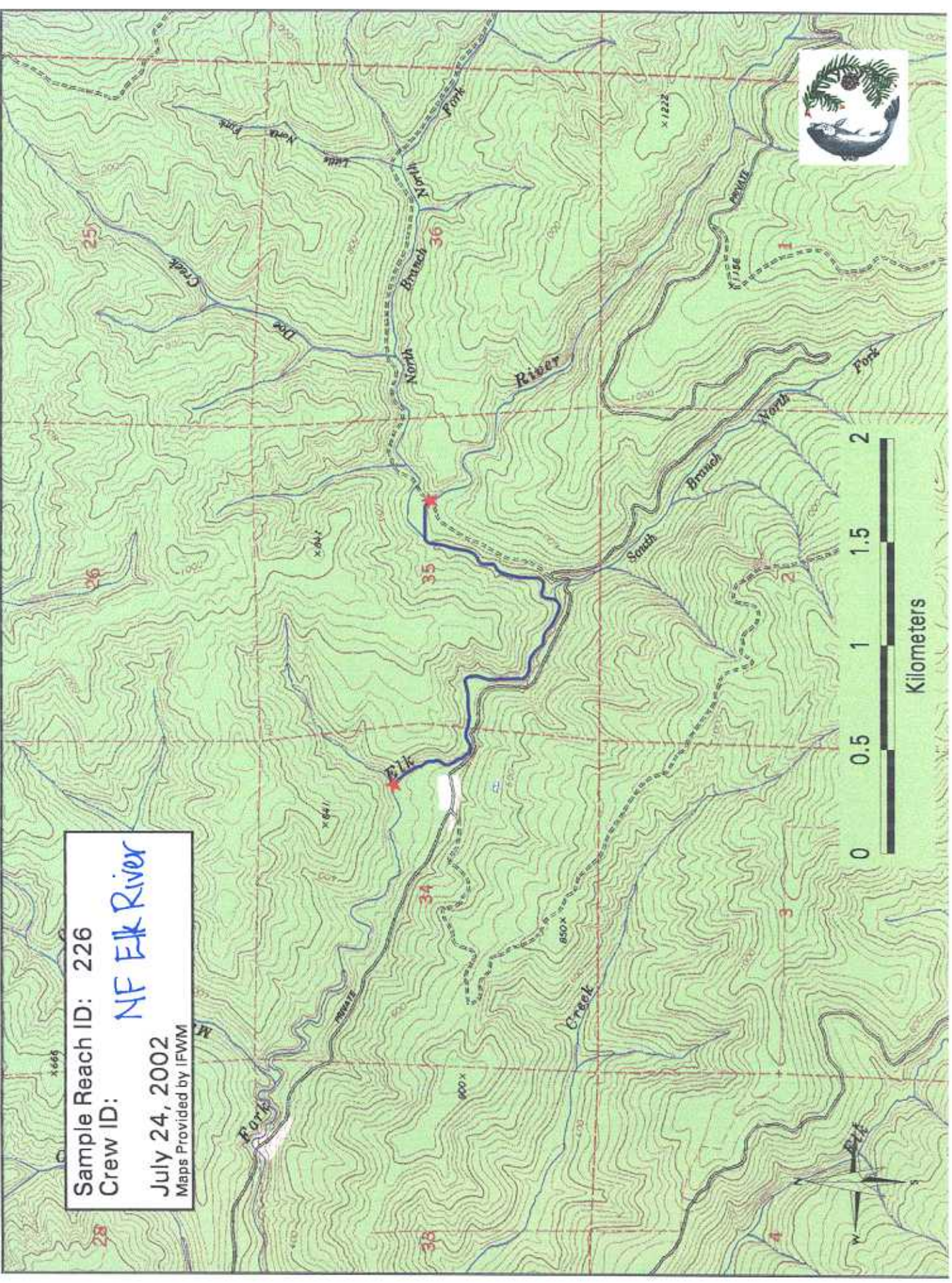
Ryanck

July 23, 2002

Maps Provided by IFWM



Sample Reach ID: 226  
Crew ID: NF Elk River  
July 24, 2002  
Maps Provided by IFWM



Sample Reach ID: 237  
Crew ID: SF Elk River  
July 24, 2002  
Maps Provided by IFWM

